# 

## U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

# FWm Approved OMB No. 44-R1387

# CARRENT Erro cente

Required under USI Shipbuilding,

SECI	ION I	
MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
Independent Petrochemical Corporation (713) 923 1651  ADDRESS (Number, Street, City, State, and ZIF Code)		
3930 Chouteau Ave., St. Louis, Mis	souri 6	3110
CHEMICAL NAME AND SYNONYMS		de RAME AND SYNONYMS Oxloss Mineral Spirits
Hydrocarbon	FORMALA	

SECTION	411 -	HAZAS	RDOUS INGREDIENTS		
PAIRTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	100		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURE	S OF (	THER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)

SECTION III - PHYSICAL DATA			
BOILING POINT (°F.)	346-403	SPECIFIC GRAVITY (1420=1) @ 60°F	0.759
VAPOR PRESSURE (mm Hg.) @ 100°F	4	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	5.3	EVAPORATION RATE	0.05
SOLUBILITY IN WATER Negligible	e)		
APPEARANCE AND ODOR Light color	red liqui	d with trace of hydrocarbo	n odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA				
FLASH POINT (Method used)	FLAMMABLE LIMITS	Let	Uel	
Tea-cloded-ens = 123°F			1_6.0	
EXTINGUISHING MEDIA				
Paclude sir-use form, CO, steam, w	eter fog. dry chi	emicals		
SPECIAL FIRE FIGHTING PROCEDURES 2				
Do not use water, exclude air, cons	wit local fire ma	arshal		
UNUSUAL FIRE AND EXPLOSION HAZARDS				
Yapon forms explosive mixture with	lair helwelan kapar	rland kewa	rox-	
•				
plosion limits.				

SECTION V + HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE 400 ppm
Effects of overexposure Anesthesia-headache, nausea, dizziness, etc. Liquid slightly to
moderately irritating to skin and eyes.  EMERGENCY AND CHRIST AND PROCEDURES  Procedures to the procedure of
Remove victim and restore breathing if required. Remove from skin with soap and water. Flush eyes with water.

			SECT	ON /	/1 - RE	EACTIVITY DATA	
STABILITY	UNSTABLE		co	CONDITIONS TO AVOID			
	STABLE		X				
INCOMPATABILITY (Materials 12 evoid) Not applicable							
HAZARDOUS DECO	MPOSI			CO	when	combusted	
HAZARDOUS		MAY OCCUR	t	2		CONDITIONS TO AVOID	
POLYMERIZATION WILL NOT O		CCUR		Х			

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Avoid open flame or spark sources. Provide adequate ventilation.
waste disposal method  Evaporate or flush with water to an open, well ventilated area. Use
oil sewer if available. Remove to container.

SECTION VIII - SPECIAL PROTECTION INFORMATION					
RESPIRATORY PRO	TECTION (Specify type)				
RESPIRATORY PROTECTION (Specify type) Organic canister mask or air pack.					
VENTILATION	LOCAL EXHAUST		SPECIAL		
12.1112.1110.11	Desireable				
	MECHANICAL (General)		OTHER		
	With approved Class De:	<u> plosion-pr</u>	bof motors and switches		
PROTECTIVE GLOV	ES	EVE PROTECTION			
Normally no	t_required	Convention	al eve cover to guard		
OTHER PROTECTIV	E EQUIPMENT		expected splasing.		

SECTION IX - SPECIAL PRECAUTIONS				
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING AVOID OPEN flames and spark sources. Avoid splash-filling.	Provide			
adequate ventilation. Avoid excessive heat.				
OTHER PRECAUTIONS				

PAGE (2) 680 830.540

# LITERATE PERSONNELLA COMP

# GCTATATA CHAMIANS

CHARTER INTERNATIONAL OR COMPANY

#### SOLVENTS - INDUSTRIAL MAPRITHAS - CHEMICALS

3960 CHOUTEAU AVERUE . ST. LOUIS, MISSOURI 63110 . 314 652-6050

# E050 / S

# SPECIFICATIONS

## ODORLESS MINERAL SPIRITS

Pounds Per Gallon at 60°F	6.32
Aniline Point °F	184
Flash Point °F T.C.C.	125
Vapor Pressure mm Hg. at 20°C	1.2
Evaporation Rate BuAc 1	0.3.
Solubility Parameter	7.2
Boiling Range, °F	
Initial 50% D.P.	355 364 395
Kauri Butanol Value	26
Paraffins	95.9
Naphthenes	4.1

# OIL, GA SPINDLE 15



# MATERIAL SAFETY DATA SHEET

DERRO CORRER

#### MATERIAL IDENTIFICATION

Name: GP Spindle Oil 15 Conoco Product Code: 7361

Synonyms: Petroleum Lubricating Oil Chemical Family: Petroleum Hydrocarbon

Manufacturer: Conoco Inc.

Address: P.O. Box 1267, Ponca City, OK 74603 CAS Registry No.: Mixture Transportation Emergency No.: (800) 424-9300 (Chemtrec)

Product Information No.:

(405) 767-6000

# HAZARDOUS INGREDIENTS

HAZARD DATA

Hazard Determination:

Health Effect Properties: Hydrocarbon/Oil Mist

Potential respiratory toxicity.

Physical Effect Properties:

Product/Mixture: None.

Not applicable.

#### III. PHYSICAL DATA

Appearance and Odor: Light brown liquid; mild petroleum hydrocarbon odor.

Boiling Range (°F)

650-950

Specific Gravity (H<sub>0</sub>0=1)

0.85

Vapor Pressure (mmHg) Vapor Density (Air=1)

Nil

% Volatile (by volume)

Nil

Not Applicable

Evaporation Rate (Ether=1)

Nil

Solubility in Water

Insoluble

#### REACTIVITY DATA IV.

Stable: X Unstable:

Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions To Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

#### V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 330° F (PMCC) Autoignition Temperature: 650° F

Handle and store in accordance with NFPA procedure for Class III B Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, foam, or carbon dioxide.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Agency (NFPA) CLASSIFICATION HAZARD RATING

Health 0 Fire 1 Reactivity 0 Least - 0 Slight - 1 Moderate - 2

High - 3 Extreme - 4

#### VI.TRANSPORTATION AND STORAGE

DOT HAZARD CLASS: Not applicable.

Precautions To Be Taken In Handling And Storing: Product is Class III B Combustible Liquid per NFPA Code No. 30-1984. Store and handle accordingly.

Shipping Paper Description: Not D.O.T. regulated.

Placard: Not D.O.T. regulated.

D.O.T. Label: Not regulated.

OSHA Label: CAUTION: Minimize exposure. Inhalation of concentrations of oil mist may cause irritation of the respiratory tract. Use in well-ventilated area.

#### VII. HEALTH HAZARD INFORMATION

PEL <u>5 mg/m<sup>3</sup>\*</u> TLV <u>5 mg/m<sup>3</sup>\*</u> Ceiling Value <u>Not Established</u> AEL <u>5 mg/m<sup>3</sup></u>

\* This value refers to airborne mists of petroleum-based cutting oils or white mineral oils.

Primary Route(s) of Entry: Skin, inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

No adverse health effect has been identified specifically for this product.

Health effect information from animal and human studies has been included on related materials, even though health experts may disagree as to the significance of this data.

January 17, 1986/LUBC0210

## VII. HEALTH HAZARD INFORMATION (continued)

Mouse skin painting studies have shown that highly solvent-refined petroleum distillates having a boiling point below  $700^{\circ}$  F, and which are similar to ingredients in this product, have not caused skin tumors.

The product may cause irritation to eyes, lungs, or skin after prolonged or repeated exposure.

Listed as Carcinogen or Potential Carcinogen by: NTP No IARC No OSHA No

# VIII. EMERGENCY AND FIRST AID PROCEDURES

Eyes: Immediately wash with fresh water for at least 15 minutes and get medical attention:

Skin: Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation persists, consult a physician.

Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

If exposed to <u>hot oil</u>, immediately cool with cold water. Do not attempt to remove oil but continue to cool exposed areas with cold packs and seek medical assistance immediately.

Inhalation: If overexposure occurs, remove individual to fresh air. If breathing stops, administer artificial respiration.

Ingestion: If this material is swallowed, do not induce vomiting. If vomiting begins, lower victim's head in an effort to prevent vomitus from entering lungs. Immediately consult a physician. Do not attempt to give liquid to an unconscious person.

Note to Physicians: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

#### IX. SPILL, LEAK AND DISPOSAL PROCEDURES

RCRA HAZARDOUS WASTE: Yes \_\_\_\_\_ No X

In Case Of Spill Or Leak: Contain spill immediately in smallest area possible.

Recover as much of the product itself as possible by such methods as vacuuming, followed by soaking up residual fluids by use of absorbent materials. Remove contaminated items including soils and place in proper container for disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

Waste Disposal Method: Recycle as much of the recoverable product as possible.

Dispose of nonrecyclable material by such methods as controlled incineration complying with federal, state and local regulations.

January 17, 1986/LUBC0210

#### X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: Impervious.

Eye Protection: Safety glasses with side shield.

Other Precautions: Skin contact should be minimized. Complete protective clothing if material is being handled hot. Launder or discard contaminated clothing. Discard contaminated leather material.

The above data is based on tests and experience which Conoco believes reliable and are supplied for informational purposes only. CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA AND NOTHING CONTAINED THEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE PRODUCT DESCRIBED, OR THEIR USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.





Conoco inc.

**MOTC0090** 



Revised 27-Feb-92

Printed 29-Mar-92

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# FLEET HEAVY DUTY MOTOR OIL

Manufacturer/Distributor	Conoco Inc. P.O. Box 2197 Houston, TX 77252		
Phone Numbers	General Informat Transport Emerg Medical Emerger	ency	1-(713)293-5550 1-(800)424-9300 1-(800)441-3637
Chemical Family	Petroleum Hydrocarbon		
Trade Names and Synonyms	Product Codes: 6210/6211/6220/6230/6240/6244/6245/ 6250/6260/6261/6265/6266 Grades: SAE 10W, 10W LP, 10W-30, 15W-40, 20W-20, 30, 40 10 TBN SAE 15W-40, 10W-30, 30, 40		6 0, 15W-40, 20W-20, 30, 40, 50;
NFPA Ratings	Health: 0 Flammability: 1 Reactivity: 0		
NPCA-HMIS Ratings	Health: Flammability: Reactivity: Personal Protecti	1 1 0 on rating to t	De supplied by user depending c

#### OSHA HAZARD DETERMINATION

Hazardous	Ingredients

Components of this material are not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA	
Boiling Point	650 to 1200°F
Vapor Pressure	Nil
Vapor Density	>1 (Air = 1.0)
% Volatiles	Nil
Evaporation Rate	Nil
Water Solubility	Insoluble
Odor	Mild petro. hydrocarbon
Form	Liquid
Color	Dark Brown
Specific Gravity	0.87-0.89 (Water = 1)
LAZARDOUS REACTIVITY	
Instability	Stable.
Incompatibility	Incompatible with strong oxidizing materials. Avoid heat, sparks, and flame.
Decomposition	Hazardous gases/vapors produced are carbon dioxide; incomplete combustion may produce carbon monoxide.
Polymerization	Polymerization will not occur.
TRE AND EXPLOSION DATA	
Flash Point	340 deg F
Method	PMCC
Autoignition	650 deg F
Fire and Explosion Hazards	Class IIIB Combustible Liquid (NFPA).
Extinguishing Media	Water Spray. Foam. Dry Chemical. CO2.
Special Fire Fighting Instructions	Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.
	Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

#### HEALTH HAZARD INFORMATION

Primary Route(s) of Entry : Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated

by Exposure:

Mouse skin painting studies have shown that highly solvent-refined petroleum distillates similar to ingredients in this product have not caused skin tumors. The product, as with many petroleum products, may cause minor skin, eye, or lung irritation, especially if poor hygienic practices or inadequate engineering design allow prolonged or repeated exposure.

Laboratory studies with mice have shown that "used" motor oil applied repeatedly to the skin caused skin cancer. In these studies, the "used" motor oil was not removed between applications. Health hazards to "used" motor oil can be minimized by avoiding prolonged skin contact.

Carcinogenicity

None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

**Exposure Limits** 

FLEET HEAVY DUTY MOTOR OIL

TLV (ACGIH) PEL (OSHA)

None Established None Established

Safety Precautions

Wash thoroughly after handling. Wash clothing after use.

#### FIRST AID

Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin Contact	The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable.
Eye Contact	In case of contact, immediately flush eyes with plenty of water for ਕਰੀਵਕਤੀ 15 ਜਾਂਗਿਹਾਣਾ. Calli a physician.
Ingestion  If swallowed, do not induce vomiting. Immediately gives of water. Never give anything by mouth to an unconstant aphysician.	
Notes to Physician	Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400mL water and mix thoroughly. Administer 5mL/kg, or 350mL for an average adult.

#### PROTECTION INFORMATION

Generally Applicable Control Measures and Precautions

Ventilation: Normal shop ventilation.

# PROTECTION INFORMATION (continued)

**Personal Protective Equipment** 

Respiratory Protection: None required except under unusual circumstances such as described in the Fire and Explosion Hazard Section.

Protective Gloves: Should be worn when the potential exists for prolonged or repeated skin exposure. NBR or neoprene recommended.

Eye Protection: Safety glasses with side shields if

splashing is probable.

Other Protective Equipment: Coveralls if splashing is

probable.

Other Precautions: Avoid any prolonged or repeated skin contact with "used" motor oil. Wash thoroughly with soap

and water after contact.

#### SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with

sawdust, sand, oil dry or other absorbent material.

Remove source of sparks and flame.

**Waste Disposal** 

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in an approved and permitted incinerator.

#### SHIPPING INFORMATION

Proper Shipping Name Not regulated.

IATA/IMO

Proper Shipping Name

Not restricted.

#### STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

## TITLE III HAZARD CLASSIFICATIONS

Acute	No	
Chronic	No	
Fire	No	
Reactivity	No	
Pressure	No	,

#### REGULATORY INFORMATION

#### OSHA HAZARD DETERMINATION

The material is not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

#### EPA DETERMINATIONS

CLEAN AIR ACT, 40 CFR 50, SECTIONS 112, 114
The material is not known to contain a Hazardous Air
Pollutant in sufficient quantity to make it subject to CAA
regulations.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT, (CERCLA/SUPERFUND), 40 CFR 302
Not applicable; this material is covered by the CERCLA petroleum exclusion. Releases are not reportable.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III (SARA) - SECTIONS 302, 304, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material is not known to contain extremely hazardous substances at greater than 1.0% concentration.

SECTION 313 - List of Toxic Chemicals (40 CFR 372) The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Toxic Chemical : Zinc Alkyl Dithiophosphate

CAS Registry Number : 68649-42-3

Approximate Concentration: 1.6%

(Upper Bound)

TOXIC SUBSTANCES CONTROL ACT (TSCA) (40 CFR 710)
The material is a mixture as defined by TSCA. The chemical ingredients in this material are in the Section 8 (b) Chemical Substance Inventory (40 CFR 710) and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies of the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261).

#### REGULATORY INFORMATION (continued)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, Section 311. The material contains the following ingredient(s) which

is considered hazardous if spilled in navigable waters.

: Petroleum Hydrocarbons Ingredient Reportable Quantity: Film or sheen upon or

> discoloration of the water surface or adjoining shoreline.

#### FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS) The material is not a WHMIS Controlled Product. Emergency Medical/Transport Number: 1-613-348-3616

#### STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65") This material is not known to contain any ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT The material contains the following ingredient(s) found on the Pennsylvania Worker and Community Right-to-Know Act Hazardous Substances List:

Ingredient : Zinc Alkyl Dithiophosphate

CAS Registry Number: 68649-42-3

Category : Environmental Hazard

Non-hazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of Pennsylvania Worker and Community Right to Know Act.

#### ADDITIONAL INFORMATION AND REFERENCES

Product Use : Motor Oil

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA. THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Responsibility for MSDS:

Safety, Health, & Env. Affairs Conoco Inc. PO Box 2197 Houston, TX 77252 713/293-5550

**End of MSDS** 

# MATERIAL SAFETY DATA SHEET

**L-4638-A**September 1985



An explanation of the terms used herein may be found in OSHA 29 CFR 1910.1200, available from OSHA regional or area offices.

(Essentially similar to U.S. Department of Labor Form OSHA-20 and generally accepted in Canada for Information surrosses).

Do Not Duplicate This Form.



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PRODUCT	Охуден			
CHEMICAL NAME	Oxygen	SYNONYMS	Not applicable	
FORMULA	O <sub>2</sub>	CHEMICAL FAMILY	Not applicable	
		MOLECULAR WEIGHT	32.00	

TRADE NAME Oxygen

## II. HAZARDOUS INGREDIENTS

For mixtures of this product request the respective component Material Safety Data Sheets. See Section IX.

MATERIAL (CAS NO.)	Wt (%)	1984-1985 ACGIH TLV-TWA (OSHA-PEL)
Oxygen (7782-44-7)	100	None currently established (None currently established

BOILING POINT, 760 mm. Hg	-183°C (-297.4°F)	FREEZING POINT	-218.4°C (-361.1°F)
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	Gas	VAPOR PRESSURE AT 20°C.	Gas
VAPOR DENSITY (air = 1)	1.105 @ 25°C	SOLUBILITY IN WATER, % by wt.	Negligible
PERCENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	Not applicable

APPEARANCE AND ODOR Colorless, odorless gas at normal temperature and pressure.

# EMERGENCY PHONE NUMBER

IN CASE OF EMERGENCIES involving this material, further information is available at all times: In the USA 304 — 744-3487 In Canada 514 — 645-5311

For routine information contact your local supplier

Union Carbide requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

UNION CARBIDE CORPORATION 
LINDE DIVISION UNION CARBIDE CANADA LIMITED 
LINDE DIVISION

PRODUCT:	Oxygen	L-4638-A September 1985
and the same analysis design as again		

#### IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: None currently established.

#### **EFFECTS OF SINGLE (ACUTE) OVEREXPOSURE:**

**SWALLOWING** — No evidence of adverse effects from available information.

SKIN ABSORPTION — No evidence of adverse effects from available information.

INHALATION — Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

**SKIN CONTACT** — No evidence of adverse effects from available information.

**EYE CONTACT** — No evidence of adverse effects from available information.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE: See "Notes to Physician."

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: See "Notes to Physician."

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None currently known.

#### **EMERGENCY AND FIRST AID PROCEDURES:**

**SWALLOWING** — This product is a gas at normal temperature and pressure.

SKIN - No emergency care anticipated.

INHALATION — Remove to fresh air. Give artificial respiration if not breathing. Keep victim warm and at rest. Call a physician.

EYES — No emergency care anticipated.

**NOTES TO PHYSICIAN:** Supportive treatment should include immediate sedation, anti-convulsive therapy if needed, and rest. Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce "vacuum-type" headache.

Newborn premature infants exposed to high oxygen concentrations may suffer delayed retinal damage which can progress to retinal detachment and blindness (retrolental fibroplasia). Retinal damage can also occur in adults exposed to 100% oxygen under greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised.

All individuals exposed for long periods to oxygen at high pressure and all who exhibit overt oxygen toxicity should have ophthalmologic examinations.

WHEN USED IN WELDING AND CUTTING: Read and understand the manufacturer's instructions and the precautionary label on the product. See American Standard Z49.1 "Safety In Welding and Cutting" published by the American Welding Society, P.O. Box 351040, Miami, Florida 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more detail. For further SAFETY AND HEALTH information, refer to Linde's free publication, L-52-529, "Precautions and Safe Practices for Electric Welding and Cutting", as well as L-2035, "Precautions and Safe Practices for Gas Welding, Cutting, and Heating." You may obtain copies from your local supplier, or by writing to Union Carbide Corporation, Linde Division, Communications Department, 39 Old Ridgebury Road, Danbury, Connecticut, 06817-0001.

**NOTE:** Suitability for use as a component in underwater breathing gas mixtures is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the effects, methods, frequency and duration of use, hazards, side effects and precautions to be taken.

PRODUCT: Oxygen

		V. FIRE AND E	XPLOSION HAZ	ZARD DATA	A second of the
FLASH POINT (test method)	Not a	pplicable	AUTOIGNIT TEMPERAT		Not applicable
FLAMMABLE LIMITS	LOWER	Not applicable		UPPER	Not applicable

**EXTINGUISHING MEDIA:** Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (i.e. safety shower) is the preferred extinguishing media for clothing fires.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizing agent, vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52°C (approximately 125°F). Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Smoking, flames and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

# WEREAGININADAY

STABILITY CONTROL OF C

CONDITIONS TO AVOID: See Section IX.

INCOMPATIBILITY (materials to avoid): Combustible materials, asphalt, flammable materials, especially oils and greases.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS P	OLYMERIZATION	CONDITIONS TO AVOID: None currently known.
May Occur	Will not Occur	
	x	

# VIII SPILL OR LEAK PROCEDURES (1997)

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Shut off leak if without risk. Ventilate area of leak or move leaking container to well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

WASTE DISPOSAL METHOD: Slowly release into atmosphere, in an open, outdoors area. Remove all flammable materials from vicinity.

Tello Service	第VIII SPECIAL	<b>EPROTECTION INI</b>	FORMATION	

RESPIRATORY	PROTECTION (specify type): Not required.
	LOCAL EXHAUST — Not applicable.
	MECHANICAL (general) — Acceptable.
VENTILATION	SPECIAL — Not applicable.
	OTHER — Not applicable.
PROTECTIVE GI	LOVES: Preferred for cylinder handling.
EYE PROTECTION	ON: Select in accordance with OSHA 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

## ाः स्वाद्धाराणातान्त्राहरू

WARNING: High pressure gas. Vigorously accelerates combustion. Avoid contact with oils, greases and other flammable materials. Never use manifolds for oxygen cylinders unless specifically designed for such use. Use only with equipment conditioned for oxygen service. Use piping and equipment adequately designed to withstand pressures to be encountered. Protect container against physical damage. Isolate from combustible gas installations and combustible materials by adequate distance or by gas-tight, fire-resistive barriers. Protect against over-heating. Never use an oxygen jet for cleaning purposes of any sort, especially clothing, as it increases the likelihood of an engulfing fire. Note: Reverse flow into cylinder may cause rupture. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow.

MIXTURES: When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death. Be sure to read and understand all labels and other instructions supplied with all containers of this product.

**NOTE:** Compatibility with plastics should be confirmed prior to use. For safety information on general handling of compressed gas cylinders, obtain a copy of pamphlet P-1, "Safe Handling of Compressed Gases in Containers" from the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202.

OTHER HANDLING AND STORAGE CONDITIONS: Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak. Never lubricate oxygen valves, regulators, etc., with any combustible substance.

The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Union Carbide, it is the user's obligation to determine the conditions of safe use of the product.



#### **GENERAL OFFICES**

IN THE USA: Union Carbide Corporation Linde Division 39 Old Ridgebury Road Danbury, CT 06817-0001 IN CANADA: Union Carbide Canada Limited Linde Division 123 Eglinton Avenue East Toronto, Ontario M4P 1J3

Other offices in principal cities all over the world.

# MATERIAL SAFETY DATA SHEET



An explanation of the terms used herein may be found in OSHA 29 CFR 1910.1200. available from OSHA regional or area offices.

(Essentially similar to U.S. Department of Labor Form OSHA-20 and generally accepted in Canada for information purposess Do Not Duplicate This Form



L-4637-B

	L PRODL	JCT IDE			
PRODUCT	Oxygen (Cryogenic Liquid)	-			
CHEMICAL NAME	Oxygen	SYN	ONYMS	Not applicable	
FORMULA	O <sub>2</sub>	CHE FAM	MICAL ILY	Not applicable	
		MOL	ECULAR GHT	32.00	

TRADE NAME Liquid Oxygen

## MINIAZARDOUSANGREDIENTS

For mixtures of this product request the respective component Material Safety Data Sheets. See Section IX.

MATERIAL (CAS NO.)	Wt (%)	1984-1985 ACGIH TLV-TWA (OSHA-PEL)		
Oxygen (7782-44-7)	100	None currently established (None currently establish		

	ी । अध्यक्ति	TOTAL STATE	and the second of the second o
BOILING POINT, 760 mm. Hg	-183°C (-297.4°F)	FREEZING POINT	-218.4°C (-361.1°F)
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	1.141 @ -183°C	VAPOR PRESSURE AT 20°C.	Gas
VAPOR DENSITY (air = 1)	1.105 @ 25°C	SOLUBILITY IN WATER, % by wt.	Not applicable
PERCENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	High

APPEARANCE AND ODOR Light Blue cryogenic liquid, odorless.

## 记《自译》(1975年),1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年,1975年

IN CASE OF EMERGENCIES involving this material, further information is available at all times: In the USA 304 -- 744-3487 In Canada 514 — 645-5311

For routine information contact your local supplier

Union Carbide requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

> UNION CARBIDE CORPORATION 
> LINDE DIVISION UNION CARBIDE CANADA LIMITED : LINDE DIVISION

PRODUCT: Oxygen (Cryogenic Liquid)

L-4637-B

September 1985

# IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: See Section II.

#### **EFFECTS OF SINGLE (ACUTE) OVEREXPOSURE:**

SWALLOWING — Severe frostbite may result from contact with liquid. No harmful effects expected from vapor.

**SKIN ABSORPTION** — No evidence of adverse effects from available information.

INHALATION — Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

SKIN CONTACT — Liquid may cause severe frostbite. No harmful effects expected from vapor.

EYE CONTACT — Liquid may cause severe frostbite. No harmful effects expected from vapor.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE: See "Notes to Physician."

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: See "Notes to Physician."

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None currently known.

#### **MERGENCY AND FIRST AID PROCEDURES:**

**SWALLOWING** — This product is a gas at normal temperature and pressure.

SKIN — For exposure to liquid, immediately warm frostbite area with warm water (not to exceed 105°F). Remove and thoroughly air contaminated clothing. In case of massive exposure, remove clothing while showering with warm water. Call a physician.

INHALATION — Remove to fresh air. Give artificial respiration if not breathing. Keep victim warm and at rest. Call a physician.

EYES — In the case of splash contamination, immediately flush eyes with water for at least 15 minutes. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN: Supportive treatment should include immediate sedation, anti-convulsive therapy if needed, and rest. Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce "vacuum-type" headache.

Newborn premature infants exposed to high oxygen concentrations may suffer delayed retinal damage which can progress to retinal detachment and blindness (retrolental fibroplasia). Retinal damage can also occur in adults exposed to 100% oxygen under greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised.

All individuals exposed for long periods to oxygen at high pressure and all who exhibit overt oxygen toxicity should have ophthalmologic examinations.

		V. FIRE AND E	XPLOSION HA	ZARD DATA		***
FLASH POINT (test method)		pplicable	AUTOIGNIT TEMPERAT	ION	Not applicable	
FLAMMABLE LIMITS N AIR, % by volume	LOWER	Not appplicable	e	UPPER	Not applicable	_

**EXTINGUISHING MEDIA:** Oxidizing agent. Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (i.e. safety shower) is the preferred extinguishing media for clothing fires.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance until cool then move containers away from fire if without risk. Do not discharge water sprays into liquid oxygen.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizing agent, vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Closed container may rupture due to heat of fire. Liquid oxygen will freeze water rapidly. Containers are provided with pressure relief devices that are designed to vent the contents when they are exposed to elevated temperatures. Do not walk on or roll equipment over spill as this could cause explosion. Liquid causes cryogenic "burns" (frostbite-like injury; see Section IV). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

# VIII ENGININAD III

STABILITY		CONDITIONS TO AVOID: Heat (See Section IX). Oxygen reacts with many materials. Refer to NFPA 491M
UNSTABLE	STABLE	"Manual of Hazardous Chemical Reactions."
	X	

**INCOMPATIBILITY** (materials to avoid): Flammable and combustible materials, especially oils and greases, including many materials not normally considered flammable.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS F	OLYMERIZATION	CONDITIONS TO AVOID: None currently known.
May Occur	Will not Occur	
	х	

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STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Immediately evacuate all personnel from danger area.

Extremely cold oxidizing liquid and gas. Allow spilled liquid to evaporate. Do not walk on or roll equipment over spill as this could cause explosion. Contact with flammable materials may cause fire or explosion. Shut off leak if without risk. Ventilate area of leak or move leaking container to ventilated area.

WASTE DISPOSAL METHOD: Keep personnel away. Liquid oxygen should be dumped into an outdoor pit filled with clean, grease-free and oil-free gravel, where it will safely evaporate.

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PROTECTION (specify type): Not required.
LOCAL EXHAUST — Preferred.
MECHANICAL (general) — Adequate.
SPECIAL — Not applicable.
OTHER — Not applicable.

PROTECTIVE GLOVES: Loose-fitting Cryogenic gloves.

EYE PROTECTION: Select in accordance with OSHA 29 CFR 1910.133

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. High top shoes are preferred. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

# भ अग्रन्ता भावना ।

Extremely cold oxidizing liquid and gas. Vigorously accelerates combustion. Contact with liquid or cold gas causes severe frostbite. Combustibles with liquid oxygen may explode on ignition or contact. Keep oil, grease and combustibles away. Use only with equipment conditioned for oxygen service. Use piping and equipment adequately designed to withstand the pressures and temperatures to be encountered. Do not get liquid in eyes, on skin or clothing. Store and use with adequate ventilation. Close valve when not in use and when empty. Clothing exposed to oxygen should be removed immediately and aired out to reduce the likelihood of an engulfing fire. Ignition sources, such as static electricity generated in clothing by walking, etc., should be prevented. Protect container against physical damage. Isolate from combustible gas installations and combustible materials by adequate distance or by gas-tight, fireresistive barriers. Protect against overheating.

MIXTURES: When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the final product. Remember, gases and liquids have properties which can cause serious injury or death.

Be sure to read and understand all labels and other instructions supplied with all containers of this product.

NOTE: Compatibility with plastics should be confirmed prior to use. For safety information on general handling of compressed gas cylinders, obtain a copy of pamphlet P-1, "Safe Handling of Compressed Gases in Containers", pamphlet P-12, "Safe Handling of Cryogenic Liquids", and pamphlet G-4, "Oxygen", from the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202.

OTHER HANDLING AND STORAGE CONDITIONS: For storage and use at consumer sites, refer to NFPA 50, "Bulk Oxygen Systems", and NFPA 51, "Oxygen-Fuel Gas System for Welding, Cutting, and Allied Processes," available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02210. Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak. Never lubricate oxygen valves, regulators, etc., with any combustible substance.

The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Union Carbide, it is the user's obligation to determine the conditions of safe use of the product.



#### **GENERAL OFFICES**

IN THE USA: Union Carbide Corporation Linde Division 39 Old Ridgebury Road Danbury, CT 06817-0001

IN CANADA: Union Carbide Canada Limited Linde Division 123 Eglinton Avenue East Toronto, Ontario M4P 1J3

Other offices in principal cities all over the world.





### MATERIAL

MSDS NUMBER - CCP:-00-0165

ADDRESS

: One Katser Plaza, Suite 650

LABEL NO. : 0066

EU SESSOESTALVELS PE

MSDS NO. : 089-0

Oakland, California 94612

PRODUCT NAME : PC-60 Unburned

DATE

: September 15, 1986 (Revised)

CHEMICAL NAME: NA

REFRACTORIES & MINERALS

DOT ID NUMBER : NA

#### HAZARDOUS INGREDIENTS

Amorphous silica (\$10<sub>2</sub>)

: <5%, typical (CAS # 7631-86-9)

Trivalent chromium ( $\mathrm{Cr}^{+3}$  as in  $\mathrm{Cr}_2\mathrm{O}_3$ ) : <15%, typical (CAS # 7440-47-3)

This product is a solid shape and in order to present a dust hazard, particles must be reduced to respirable size.

Compounds of trivalent chromium, present in the unused product, may, as the result of use, be converted to hexavalent chromium. Hexavalent chromium compounds are considered carcinogens by the National Toxicology Program (NTP) and the World Health Organization's International Agency for Research on Cancer (IARC).

#### II. EXPOSURE LIMITS

1986-87 ACGIH TLV's : 0.5 mg/m<sup>3</sup>  $Cr^{+3}$ ; 0.05 mg/m<sup>3</sup>  $Cr^{+6}$ , 10 mg/m<sup>3</sup> sliica.

OSHA 1910,1000 PEL's: 0,5 mg/m<sup>3</sup> soluble Cr., 20 mppcf silica.

#### PHYSICAL DATA

APPEARANCE : Soild

COLOR : Dark

SPECIFIC GRAVITY (gm/cc): 2.5 - 3.5

BOILING POINT: NA . . .

ODOR : None

SOLUBILITY IN WATER (\$): NII

MELTING POINT: NA

VAPOR PRESSURE (mm Hg) : NA

#### PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION :

Respirator approved by NIOSH/MSHA and adequate for contaminant concentrations

encountered.

HAND PROTECTION

Gloves are recommended.

EYE PROTECTION

Safety glasses are recommended. :

OTHER

#### EMERGENCY MEDICAL PROCEDURES

2.

"USED PRODUCT:

Skin: Wash with soap and water,

Eyes: Irrigate immediately with plenty of water. Obtain medical attention if necessary.

SED PRODUCT : May contain hexavalent chromium compounds.

Skin: Wash with soap and mild detergent in running water. Remove contaminated ciothing.

Eyes: Irrigate immediately with plenty of water lifting upper and lower tids occasionally.

Continue for 15 minutes. Get medical attention.

#### HEALTH INFORMATION

ARCHNOGENICITY: See Section I.

, 2 CW

'NHALATION: Long'term'exposure to trivalent chromium appears to have no significant health effect. Hexa-

valent chromium compounds, potentially present in the used product, are irritants of the respiratory tract and skin, and repeated or prolonged exposure may increase the risk of

cancer (see Section 1). May aggrevate pre-existing respiratory conditions.

Repeated or prolonged contact with potentially hazardous used product may cause sensitization SKIN:

dermatitis.

TYES: Contact with potentially hazardous used product may be corrosive to tissues.

#### FIRE & REACTIVITY DATA

STABILITY T Stable

NA

H POINT

"LAMMABLE LIMITS: NA

UNUSUAL FIRE & EXPLOSION HAZARDS: NA HAZARDOUS DECOMPOSITION PRODUCTS: NA INCOMPATIBILITY

EXTINGUISHING MEDIA: NA

CONDITIONS TO AVOID: NA

#### VIII. ENVIRONMENTAL

SPILL OR LEAK PROCEDURES: We recommend that the purchaser establish a spill prevention, control and counter measure plan. This plan should include procedures for proper storage as well as clean-up of spills or teaks. The procedures should conform to safe practices and provide for proper recovery or disposal. Depending on the quantity spilled, notification of the National Response Center (800-424-8802) may be required In case of hazardous substances. (See EPA and DOT regulations; also various state and local regulations.)

WASTE DISPOSAL METHOD: Chromite (Cr +3) may, in normal use, be converted chemically to a chromate (Cr<sup>+6</sup>). Hexavaient chromium (Cr<sup>+6</sup>) is considered a hazardous material. Test product to determine hazard status and disposal requirements under federal, state and local laws and regulations.

#### ADDITIONAL INFORMATION IX.

- 1. Use an approved respirator if dust is created during handling, installation or tearout.
- 2. Toxic risk may be altered by chemical or physical changes caused by conditions of use.
- 3. This product is a solid refractory shape.

aformation in this MSDS was obtained from sources which we believe are reliable. However, the information is ided without any representation or warranty, express or implied, regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be

nd our knowledge. For this and other reasons we do not assume responsibility and expressly disclaim liability for . damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the

# Océ-Bruning, Inc.

MSDS NUMBER ASSIGNED CCPC-00-0186

page 1 of 2

SAFETY MATERIAL DATA SHEET

1800 Bruning Drive West Itasca, Il. 60143

Non-emergency information phone: 1-708-351-7579

EMERGENCY PHONE: 1-800-424-9300 CHEMTREC 24 HOURS Issue Date: 11-01-91

#### I. PRODUCT IDENTIFICATION

BRUNING PD ACTIVATOR PRODUCT NAME: BRUNING PD DEVELOPER SYNONYMS:

CATALOG NUMBER: 28-0080, 28-0110, 28-0111, 28-0222, and 28-0404

ITEM NUMBERS: 22-750080, 22-761003, 22-761012, 22-761021, & 22-761404

DOT HAZARD CLASS: None

HMIS HAZARD RATING: Health-2, Flammability-1, Reactivity-0

### II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

This is confidential information to be used for health and safety purposes only.

COMPONENT	CAS #	ACGIH(TLV)	OSHA(PEL)	WT%
Benzyl alcohol	100-51-6	none	none	10%
Ethylene glycol *	-107-21-1-	50 PPM(Ceiling)	50 PPM(Ceiling)	35%
Hexylene glycol	<del>107</del> -41-5	25 PPM(Ceiling)	25 PPM(Ceiling)	
Oleic acid	112-80-1	none	none	5%
Ethanolamine	141-43-5	3 PPM(TWA)	3 PPM(TWA)	
•		6 PPM(STEĹ)	6 PPM(STEĹ)	20%
2-(2-aminoethoxy)ethanol	- <del>929-</del> 06-6	none `	none	20%

\* This product contains ethylene glycol which is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

## III. PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT.....: 216 - 650 Deg F SPECIFIC GRAVITY....: 1.05

VAPOR PRESSURE.....: <1 mm Hg MELTING POINT..... not known

VAPOR DENSITY..... 3 (air=1) **EVAPORATION RATE** 

SOLUBILITY IN WATER..: complete (butyl acetate=1)..: <.1

pH..... 11.0

APPEARANCE AND ODOR ...: clear, pale yellow liquid, no distinct odor.

#### IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT....: 233 deg. F (Pensky-Martin c.c.)

FLAMMABLE LIMITS.... not known

EXTINGUSHING MEDIA....: water, CO2, dry powder

SPECIAL FIRE FIGHTING PROCEDURES...: Firefighters should use self contained

breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS..: none known.

## V. REACTIVITY DATA

STABILITY....: stable

CONDITIONS TO AVOID..... open flame, high temperature INCOMPATIBILITY (Materials to avoid)..: strong acids, oxidizing agents

HAZARDOUS DECOMPOSITION OR BYPRODUCTS .: In fire conditions or when reacting with

strong oxidizing agents, oxides of carbon

and nitrogen are produced.

HAZARDOUS POLYMERIZATION.... will not occur

#### **HEALTH HAZARD DATA** VI.

ROUTES OF ENTRY: SIGNS & SYMPTOMS OF EXPOSURE/HEALTH HAZARDS (ACUTE & CHRONIC): Eye Contact.: Causes eye irritation. Acute: Extremely irritating, potential eye damage. Draize Primary Irritation Test Score: 57.7 "extremely

irritating". Chronic: None known.

Skin Contact: May cause itching, irritation. Acute: Prolonged contact without washing or protection can be extremely irritating and may cause burns. Not corrosive per 49 CFR part 173 appendix A (results negative after 4 hours contact). Chronic: repeated, prolonged

contact could defat skin and cause dermatitis.

Inhalation..: A very objectionable odor was produced in lab test at concentrations well below the TLV's and dryness of the throat was was observed. Acute: Marked irritation of nose, throat, and lungs. Chronic: None known.

Ingestion...: Causes irritation of the degestive tract. Acute: Low oral toxicity. LD 50 (rat): 3500mg/Kg. Chronic: None known.

CARCINOGENICITY: None of the ingredients are listed as carcinogens by NTP, IARC, or OSHA. Ames tests of the mixture were negative, indicating no mutagenic activity.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: none known.

#### **EMERGENCY FIRST AID PROCEDURES:**

Eye.....: Summon a physician at once and meanwhile irrigate with large amounts of running water for at least 15 minutes.

Wash with soap and water. Skin....:

Inhalation: Remove to fresh air. Ingestion.: See a physician.

#### VII. PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Mop or flush spill with water and blot with towels. Use protective gloves and goggles.

WASTE DISPOSAL METHOD: Incineration. Small quantities may be diluted with water and flushed down the drain if local regulations permit.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Do not rub eyes after contact with fluid. Avoid puncturing containers.

OTHER PRECAUTIONS: When repairing or servicing equipment, use the same precautions for handling contaminated parts as recommended for the fluid.

#### VIII. CONTROL MEASURES

RESPIRATORY PROTECTION: Not required unless fighting fires.

Sufficient ventilation is needed to prevent odors and to handle the VENTILATION: heat produced by the PD Copy Machine used.

Local exhaust..... Not required Special..: Not required Mechanical (General): Usually adequate Other...: Not required

PROTECTIVE GLOVES..: Rubber or polyethylene recommended for handling the fluid.

EYE PROTECTION....: Safety glasses or goggles recommended. OTHER PROTECTIVE CLOTHING OR EQUIPMENT..: Not required.

WORK/HYGENIC PRACTICES..... Wash hands after contact with fluid.

# CARPENTER TECHNOLOGY CORPORATION

E volt Bioth BraTe 4 august

MATERIAL

**DRICCH** 

GENERAL OFFICES: P.O. BOX 662 READING, PA 19603

CERRO COPPER PRODUCTS DIV CERRO CORP P O BOX 681 EAST ST LOUIS IL

62202

SAFETY DATA SHEET IS BELIEVED TO BE ACCURATE, AS OF THE REVISION DATE, CARPENTER TECHNOLOGY CORPO-RATION MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON, NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTA-BILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE MATERIAL OR DATA HEREIN IS MADE HEREUNDER.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT THE HEALTH AND SAFETY DEPARTMENT AT: 215-371-2000.

#### **SECTION I - PRODUCT IDENTIFICATION**

PRODUCT DESCRIPTION: TYPE 303 PROJECT 70 STAINLESS

RED PAINT

		SECTION II - HAZARDOUS INGREDIENTS
INGREDIENTS	%	PEL / TLV 8 HOUR TWA UNLESS OTHERWISE NOTED
TRON 1309-37-1 CHROMI UM 7440-47-3 NI CK EL 7440-02-0 MA NG ANESE 7439-96-5 COBALT 7440-48-4	70.00 18.00 9.00 1.80 .75	PEL 10.0 MG/M3 TLV 5.0 MG/M3 PEL 1.0 MG/M3 TLV 0.5 MG/M3 PEL 1.0 MG/M3 PEL 1.0 MG/M3 PEL 1.0 MG/M3 TLV 1.0 MG/M3 PEL C5.0 MG/M3 TLV C5.0 MG/M3 TLV C5.0 MG/M3 (FUME) 3.0 MG/M3 STEL(FUME) PEL 0.1 MG/M3 TLV 0.1 MG/M3
		* - THESE SUBSTANCES ARE REGULATED IN THEIR OXIDE FORM

THE ABOVE PERCENT CONCENTRATIONS ARE CONSIDERED NOMINAL AND ARE PROVIDED FOR INDUSTRIAL HYGIENE PURPOSES. THEY DO NOT REPRESENT A CERTIFICATION OF CONTENT.

#### SECTION III - PHYSICAL DATA

**BOILING PT.: HIGH** MELTING PT.: 2400 to 2800 F SPECIFIC GRAVITY: 7.5 to 8.5 VAPOR DENSITY: NIL

SOLUBILITY IN WATER: INSOLUBLE

VAPOR PRESSURE: NIL

APPEARANCE AND ODOR: SOLID, ODORLESS METAL

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

UNLESS OTHERWISE NOTED, NONE. PRODUCT IS A SOLID METAL. NOTES:

### SECTION V - HEALTH HAZARD DATA

SPECIALTY STEEL ALLOYS ARE GENERALLY NOT CONSIDERED HAZARDOUS IN THE FORM SHIPPED (SOLID BARS, BILLETS, RODS, WIRE, ETC.), HOWEVER, IF YOUR PROCESS INVOLVES GRINDING, MELTING, WELDING, CUTTING, OR ANY OTHER PROCESS THAT CAUSES A RELEASE OF DUST OR FUME, HAZARDOUS LEVELS OF DUST OR FUME OF THE CONSTITUENTS OF THESE ALLOYS COULD BE GENERATED. THE FOLLOWING IS A LIST OF POTENTIAL HEALTH EFFECTS FOR ALL HAZARDOUS ELEMENTS THAT ARE POSSIBLY CONTAINED IN ANY OF OUR ALLOYS. PLEASE REFER TO SECTION II TITLED "HAZARDOUS INGREDIENTS" FOR A LIST OF THOSE SPECIFIC ELEMENTS CONTAINED IN THIS PARTICULAR ALLOY.

#### **HEALTH EFFECTS:**

- \*ALUMINUM: METAL DUST AND OXIDE IS GENERALLY CONSIDERED A "NUISANCE" PARTICULATE. MAY CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN EXCESSIVE CONCENTRATIONS. BERYLLIUM: CAN CAUSE DERMATITIS, ALSO CAUSES A SEVERE CHRONIC LUNG DISEASE KNOWN AS "CHRONIC BERYLLIUM DISEASE" WHICH IS OFTEN
- FATAL

BORON OXIDE: HAS CAUSED IRRITATION OF THE EYES, NOSE, AND SKIN OF EXPERIMENTAL ANIMALS. IT MAY HAVE THE SAME EFFECT ON HUMANS. CHROMIUM: FERROCHROME ALLOYS HAVE BEEN ASSOCIATED WITH LUNG CHANGES IN WORKERS EXPOSED TO THESE ALLOYS.

COBALT: FUME OR DUST CAUSES IRRITATION OF THE NOSE AND THROAT AND MAY CAUSE AN ALLERGIC SKIN RASH. ALSO HAS BEEN REPORTED TO CAUSE RESPIRATORY DISEASE WITH SYMPTOMS RANGING FROM COUGH AND SHORTNESS OF BREATH TO PERMANENT DISABILITY AND DEATH. THE SYMPTOMS FREQUENTLY GO AWAY WHEN EXPOSURE HAS STOPPED, BUT SOMETIMES THE SYMPTOMS PROGRESS AFTER EXPOSURE HAS CEASED.

COPPER: FUME OR DUST CAUSES IRRITATION OF THE EYES, NOSE, AND THROAT AND A FLU-LIKE ILLNESS CALLED METAL FUME FEVER. SYMPTOMS INCLUDE FEVER, MUSCLE ACHES, NAUSEA, CHILLS, DRY THROAT, COUGH, WEAKNESS, AND SWEET OR METALLIC TASTE IN THE MOUTH.

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#### SECTION V - HEALTH HAZARD DATA (CONTINUED)

HAFNIUM: HAFNIUM SALTS HAVE CAUSED IRRITATION OF THE EYES AND SKIN IN EXPERIMENTAL ANIMALS. OTHER HAFNIUM COMPOUNDS HAVE CAUSED LIVER DAMAGE IN ANIMALS ON PROLONGED FEEDING.

IRON OXIDE: REPEATED EXPOSURE TO IRON OXIDE FUME OVER A PERIOD OF YEARS MAY CAUSE X-RAY CHANGES OF THE LUNGS, BUT DOES NOT CAUSE THE EXPOSED PERSON TO BECOME ILL.

MANGANESE: INHALATION OF MANGANESE FUME MAY CAUSE "METAL FUME FEVER" WITH SYMPTOMS OF CHILLS, FEVER, NAUSEA, COUGH, DRY THROAT, WEAKNESS, MUSCLE ACHES, AND A SWEET OR METALLIC TASTE IN THE MOUTH, PROLONGED OR REPEATED EXPOSURE MAY AFFECT THE NERVOUS SYSTEM, WITH DIFFICULTY IN WALKING AND BALANCING, WEAKNESS OR CRAMPS IN THE LEGS, HOARSENESS OF THE VOICE, TROUBLE WITH MEMORY OR JUDGEMENT, UNSTABLE EMOTIONS OR UNUSUAL IRRITABILITY, THE RESPIRATORY SYSTEM MAY ALSO BE AFFECTED BY A PNEUMONIA LIKE ILLNESS WITH SYMPTOMS OF COUGHING, FEVER, CHILLS, BODY ACHE, CHEST PAIN AND OTHER COMMON SIGNS OF PNEUMONIA.

MOLYBDENUM: OXIDES OF MOLYBDENUM HAVE CAUSED IRRITATION OF THE EYES, NOSE, AND THROAT, WEIGHT LOSS, AND DIGESTIVE DISTURBANCES IN EXPERIMENTAL ANIMALS.

NICKEL: FUMES ARE RESPIRATORY IRRITANTS AND MAY CAUSE RESPIRATORY DISEASE. SKIN CONTACT CAN ALSO CAUSE AN ALLERGIC SKIN RASH. NICKEL AND ITS COMPOUNDS HAVE BEEN REPORTED TO CAUSE CANCER OF THE LUNGS AND SINUSES.

TANTALUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY BUT HAS PRODUCED TRANSIENT LESIONS OF THE LUNGS IN EXPERIMENTAL ANIMALS.

TIN: GENERALLY CONSIDERED TO EXHIBIT A LOW ORDER OF TOXICITY. MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT AND SKIN.

TITANIUM DIOXIDE: CONSIDERED TO BE A "NUISANCE" PARTICULATE. CAN CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN HIGH CONCENTRATIONS. SLIGHT LUNG CHANGES MAY OCCUR.

\*TUNGSTEN: METAL AND INSOLUBLE COMPOUNDS ARE GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY, BUT HAVE PRODUCED LUNG CHANGES IN EXPERIMENTAL ANIMALS.

VANADIUM PENTOXIDE: DUST AND FUME MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT, AND RESPIRATORY TRACT. IT MAY ALSO CAUSE BRONCHITIS WITH WHEEZING AND CHEST PAIN. A GREENISH DISCOLORATION OF THE TONGUE MAY OCCUR. AFTER SYMPTOMS HAVE OCCURRED FOLLOWING INITIAL EXPOSURE, REPEATED EXPOSURE MAY CAUSE MORE SEVERE SYMPTOMS OF THE SAME NATURE. REPEATED EXPOSURES MAY CAUSE CHRONIC BRONCHITIS, OR ALLERGIC SKIN RASH.

ZIRCONIUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY. SKIN RASH HAS BEEN REPORTED FROM EXPOSURE TO ZIRCONIUM CONTAINING DEODORANTS.

REFERENCES: HEALTH HAZARD DATA FOR THE ELEMENTS MARKED WITH AN (\*) WAS TAKEN FROM ACGIH'S <u>DOCUMENTATION OF TLV'S</u>. HEALTH HAZARD DATA FOR THE REMAINING ELEMENTS WAS TAKEN FROM THE NIOSH / OSHA <u>OCCUPATIONAL</u> HEALTH <u>GUIDELINES FOR CHEMICAL HAZARDS</u>. FOR ADDITIONAL SOURCES OF INFORMATION ON POTENTIAL HEALTH EFFECTS OF THESE SUBSTANCES, PLEASE REFER TO OSHA'S HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) APPENDIX C.

CARCINOGENIC REFERENCES; CHROMIUM, COBALT-CHROMIUM ALLOYS, AND NICKEL HAVE BEEN IDENTIFIED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) AND / OR THE NATIONAL TOXICOLOGY PROGRAM (NTP) AS POTENTIAL CANCER CAUSING AGENTS.

#### **EXPOSURE ROUTES:**

EXPOSURE TO SPECIALTY STEEL ALLOYS OCCURS PRIMARILY FROM INHALATION OF DUST OR FUMES. HOWEVER, CONSTITUENTS OF THESE ALLOYS MAY CAUSE EFFECTS DIRECTLY UPON THE SKIN OR EYES. CERTAIN CONSTITUENTS MAY ALSO BE HARMFUL IF SWALLOWED.

#### FIRST AID:

INHALATION - MOVE PERSON TO FRESH AIR UNTIL RECOVERED, CONSULT A PHYSICIAN.

SKIN - WASH WITH WATER AND MILD DETERGENT, CONSULT A PHYSICIAN.

EYE - FLUSH THOROUGHLY WITH WATER, CONSULT A PHYSICIAN.

INGESTION - WHILE INGESTION OF LARGE ENOUGH QUANTITIES TO CAUSE HEALTH EFFECTS IS UNLIKELY, CONSULT A PHYSICIAN IF IT OCCURS.

#### SECTION VI - REACTIVITY

STABILITY: STABLE

INCOMPATIBLE MATERIALS: NONE

HAZARDOUS DECOMPOSITION: NONE POLYMERIZATION: WILL NOT OCCUR

#### **SECTION VII - SPILL OR LEAK PROCEDURES**

PRODUCT IS A SOLID METAL AS SHIPPED. NO POTENTIAL FOR SPILL OR LEAK

#### **SECTION VIII - SPECIAL PROTECTION INFORMATION**

#### **YENTILATION:**

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME, USE LOCAL AND GENERAL EXHAUST VENTILATION TO KEEP AIRBORN CONCENTRATIONS OF DUST OR FUMES BELOW THE TLV.

#### RESPIRATORY PROTECTION:

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME IN EXCESS OF THE PERMISSIBLE EXPOSURE LIMIT, NIOSH APPROVED RESPIRATORS FOR PROTECTION AGAINST AIRBORN DUST OR FUMES SHOULD BE WORN. RESPIRATORS SHOULD BE USED IN ACCORDANCE WITH 29CFR 1910.134.

#### PROTECTIVE EQUIPMENT:

GLOVES AND BARRIER CREAMS MAY BE NECESSARY TO PREVENT SKIN SENSITIZATION AND DERMATITIS. IF YOUR PROCESS INVOLVES GRINDING OR ANY OTHER ACTION THAT CAUSES THE RELEASE OF DUST OR FUMES, APPROVED SAFETY GLASSES OR GOGGLES SHOULD BE WORN.

#### **SECTION IX - SPECIAL PRECAUTIONS**

NONE

DATE OF PREP. 8/12/86

SECTION 1

# 11-2

SEYMOUR OF SYCAMORE, INC. 917 CROSBY AVE., SYCAMORE, IL. 60178 EMERGENCY TELEPHONE NO. 815-895-9101 TRADE NAME: QUIK COLOR GLOSS WHITE PRODUCT CLASS: AEROSOL - VINYL TOLUENE ALKYD ENAMEL MANUFACTURERS CODE IDENTIFICATION: 00-0011-0002

9		SECTION 2 -	HAZARBO	US INDRF	DIENTS			ַנְיַבְי
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11	INGREDIENT - (CAS+)	J	ACI PERCENT	GIH TLV() PPH	HROV(ANT	PE1. LE1.	VAPOR PRESSURE AEROSOL CANS	
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16	(13463-67-7) (AS	DUST)		MD	ND			CERNO CON MSDS NUN ERTPERMENTAL
17	METHYLENE CHLORIDE		34.16	100.0		13.00		, , , , , , , , , , , , , , , , , , ,
18	(75-09-2)	PEL.			SECTION 2			-040 -040 -040 -040 -040 -040 -040 -040
10	TOLUENE		10.21	100.0			•	
20	(108-88-3)	PEL			SECTION 2			
21	MINERAL SPIRITS		•12	ND ND	ND	+70	)	
22	(64742 <del>-86</del> -7)			ND .	MD			
23	VARNISH MAKERS & PA		4.84	300.0	•	1.10		
24.	NAPHTHA (8030-30-	· <del>(</del> )		ND A	ND A	4 44		
25	XYLENE	<b>,</b> :	3.97	100.0		1.00		
26 27	(1330-20-7)			100	435	5 74		
28	PROPANE - (74- <del>78-</del> 6)		21.0	ND 1	ND .	2,30		
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33	MATERIAL	WEIGHTED AVERAGE	CEILIN				ING CONCENTRATION	
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35	HETHYLENE CHLORIDE	SAA DOM	1,000	DDM	2,000 PI		5 MINUTES IN	
36	HEINICENE CHEONIDE	JVV FFR	1,000	rrn	2)WV F1	r III	ANY 2 HOURS.	
	TOLUENE	200 PPH	700	PPM	500 P		10 MINUTUTES.	<del></del>
37.	TOUCH	200 1111	302		JVV F1	111	TO UTHOLOUES!	_
38 39		SECTION 3 -	DUNCTOM	DATA				
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42	BOILING POINT: NA			LIADOD DE	ENSITY: H	AUTED	TUAN ATD	
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46				DI VULLI	<u> </u>	· Out	DILLOIS IN	
47								_
48		SECTION 4 -	FIRE ANI	l tabi uc.	TON DATA		,	
49		CLUIANT 7	· LINE PRO	· LW LUS.	ייין דען זועי			
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51	FLASH POINT: AEROS	01 -10 NFR. F	(T.p.c.	) 15	t det deu	כ אמדז		
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5.5	EXTINGUISHING MEDIA	: LISE CARRON	NTOYTH	T, DRY M	ENICH ID	FRAM.		
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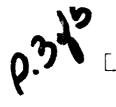
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UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL CAN.

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY MAY BE INEFFECTIVE, WATER MAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOG MOZZLES ARE PREFERABLE, WEAR GOGGLES AND SELF CONTAINED BREATHING APPARATUS. SECTION 5 - HEALTH HAZARD THRESHOLD LIMIT VALUE: SEE SECTION 2 10 11 TITANIUM DIOXIDE 12 (13463-67-7) (AS DUST) 13 OVEREXPOSURE - NONE KNOWN 14 NOTE: INHALATION TESTS IN RATS: BUST FROM BRIED PRODUCTS PRODUCED AN 15 INERT OR NUISANCE DUST RESPONSE IN THE LUNGS. 16 17 METHYLENE CHLORIDE 19 (75-09-2)20 ACUTE OVEREXPOSURE - INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND 21 STUPOR, NAUSEA, AND VONITING, SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR IN-22 COORDINATION, UNCONCIOUSNESS, AND DEATH. 23 INHALATION - IRRITATES RESPIRATORY TRACT. 24 <u> SKIN CONTACT - HILDLY IRRITATING TO SKIN, SKIN CONTACT HAY PRODUCE A BURN-</u> 25 ING SENSATION, PROLUNCED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED, 26 ROUGH AND DRY DUE TO THE REHOVAL OF NATURAL DILS AND MAY RESULT IN DER-27 28 SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN. 29 EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLAMMA-30 31 INGESTION - IT CAN IRRITATE THE GASTOINTESINAL TRACT. IT COULD PRODUCE 32 CHEMICAL PHELMONIA IF VONITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY 33 ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN DEATH, CHRONIC OVEREXPOSURE - CAN CAUSE HEADACHE, MENTAL CONFUSION, FATIQUE, LOSS 35 OF APPETITE, NAUSEA, VONITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL 36 DISTURBANCES, PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERNATITIS. 37 IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATOORY STUDIES OF 38 RATS AND MICE AT HIGH LEVELS OF EXPOSURE. THERE IS NO DATA SHOWING A 39 RELATIONSHIP BETWEEN THESE STUDIES AND THE POTENTIAL AS A HUMAN CARCINOGEN. 40 EXCESSIVE EXPOSURE MAY CAUSE CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEY 41 EFFECTS. 42 43 FIRST AID: 44 EYE CONTACT - IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT 15 45 MINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE. 46 SEEK MEDICAL ATTENTION IMMEDIATELY. 47 SKIN CONTACT - WASH CONTAKINATED AREA WITH SOAP AND WATER. A SOOTHING 48 DINTHENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING, REMOVE 49 contaminated clothing and foothear and hash clothing before reuse. Discard 50 FOOTWEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION. 51 INHALATION - GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR, IF 57 BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. DXYGEN MAY 53 BE ADMINISTERED, IF READILY AVAIALBLE. SEEK MEDICAL ATTENTION



INGESTION - IF SHALLOWED DO NOT INDUCE VOHITING, IF VOHITING OCCURS SFONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRMAY CLEAR, NEVER GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON, SEEK MEDICAL ATTENTION, IMMEDIATELY.

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TOLUENE
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ACUTE OVEREXPOSURE -

DUEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM

DEPRESSION PRODUCING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS

OF CONSCIOUSNESS.

EYE CONTACT - SHORT-TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE

IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING.

SKIN CONTACT - PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING

AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.

INHALATION - HIGH CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY

BE SLIGHTLY IRRITATING TO MUCOUS MEMBRANES.

INGESTION - LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION

(BREATHING) OF VOHITUS INTO THE LUNGS HUST BE AVOIDED AS EVEN SHALL

QUANTITIES IN THE LUNGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULHONARY

EDEMA/HEMORRHAGE.

CHRONIC OVEREXPOSURE - RESPIRATORY TRACT IRRITATION.

CENTRAL MERVOUS SYSTEM BEPRESSION IN HIGH CONCENTRATIONS.

LIVER AND KIDNEY DAMAGE.

BRAIN CELL DAMAGE MAY RESULT FROM LONG TERM INHALATION OF TOLLENE VAPOR.

ANIMAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVLS OF TOLUENE PRODUCED CARDIAC SENSITIZATION, SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART

RYTHMS. RATS EXPOSED TO 1400 PPH OR 1200 PPH OF TOLUENE FOR 14 HOURS PER DAY FOR 4 TO 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREQUENCY HEARING

DEFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE VAPORS (E.G. THE TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS.

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#### FIRST AID:

EYE CONTACT - FLUSH WITH WATER FOR 15 MINUTES WHILE HOLDING EYELIES OPEN.

GET MEDICAL ATTENTION.

SKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTANINATED CLOTHING AND SHOES. FOLLOW BY WASHING WITH SOAP AND WATER. DO NOT REUSE CLOTHING OR

SHOES UNTIL CLEANED. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INHIALATION - REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING

IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION - DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP

HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LINGS. SET

MEDICAL ATTENTION.

#### MINERAL SPIRITS

(<del>64742-86-</del>7)

ACUTE OVEREXPOSURE - CAN LEAD TO CENTRAL NERVOUS SYSTEM DEPRESSION PRODUC-

ing such effects as headache, dizziness, nausea, and loss of consciousness.

EYE CONTACT - SHORT TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE

IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING.

SKIN CONTACT \_ PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING \_

AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.

INHILATION \_ HIGH CONCENTRATIONS OR PROLONGED EXPOSURE TO LOWER CONCENTRA\_
TIONS MAY BE SLIGHTLY IRRITATING TO MUCOUS NEMBRANES.

INGESTION \_ LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (PREATHING

IN) OF LIQUID MUST BE AVOIDED AS LIQUID CONTACT WITH THE LUNGS CAN RESULT

IN CHEMICAL PNEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE.

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EYE CONTACT - FLUSH WITH WATER, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT - WASH WITH SOAP AND WATER, REMOVE CONTAMINATED CLOTHING AND DO NOT REUSE UNTIL LAUNIERED. IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION - REMOVE TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL ATTENTION.

INGESTION - DO NOT INDUCE VONITING EVEN THOUGH VONITING MAY OCCUR, IF VOHITING OCCURS, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.

#### VARNISH MAKERS & PAINTER

\_\_NAPHTHA\_\_(8030-30-6)

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ACUTE OVENEXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

\_\_\_EYE\_CONTACT -\_\_ MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AID: \_

EYE CONTACT - FLUSH EYES WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK INNEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANTITIES OF MATER.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES. ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INNEDIATE MEDICAL ATTENTION. INGESTION - IF SHALLOWED, DO NOT INDUCE VOMITING, SEEK IMMEDIATE MEDICAL ADVICE AND/OR ATTENTION.

#### XYLENE

(1330-20-7)

ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - MAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED

CONTACT.

INHALATION - IRRITANT TO UPPER RESPIRATORY SYSTEM. CAN CAUSE HEADACHE. MAUSEA, AND BIZZINESS.

INGESTION - MAY BE HARNFUL IF SHALLOWED.

CHRONIC OVEREXPOSURE -

POSSIBLE LIVER AND KIDNEY DAMAGE.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUAINTIES OF MATER FOR AT LEAST 15 HINUTES AND SEEK INVEDIATE MEDICAL ATTENTION.

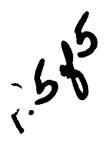
SKIN CONTACT - WASH SKIN WITH SDAP AND LARGE QUANITIES OF WATER AND SEEK

MEDICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS. VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED, IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INVEDIATE MEDICAL ATTENTION. INGESTION - IF SHALLOWED, DO NOT INDUCE VONITING, SEEK INMEDIATE MEDICAL

ADVICE ANIVOR ATTENTION.

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# QUM GLOSS WHITE

SECTION 6 - REACTIVITY DATA

	STABILITY: STABLE CONDITIONS TO AVOID: BO NOT STORE AROVE
	120 DEG. F. KEEF FROM SPARKS, PILOT LIGHTS DR OFEN FLAME.
	120 DECEMBER FROM SHANDS FIEDE CISHES ON OF DEFENDER
	THE PROPERTY OF THE PROPERTY O
	INCOMPATABILITY: (MATERIALS TO AVOID) NOME KNOWN
	HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE HAZARDOUS FUMES WHEN HEATED
	TO DECOMPOSITION, FUNES MAY CONTAIN CARBON DIOXIDE AND/OR CARBON MONOXIDE.
	FUMES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAPOR AND TRACES OF PHOSOENE.
	HAZARDOUS POLYMERZATION: WILL NOT OCCUR.
	METHODO LOCIUESTRITON! MICE MOI OCCOM!
	CONDITIONS TO AVOID: NA
	**************************************
	SECTION 7 - SPILL OR LEAK PROCEDURES
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF
	IGNITION, AUDID BREATHING VAPORS, VENTILATE AREA. WIPE UP WITH INERT MATERIALS
	AND PLACE IN APPROPRIATE CONTAINER.
	HID TURE IN AT NO RIMIE CONTINUENT
	WASTE DISPOSAL METHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH
	LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME
	COMPACTOR. DO NOT PUNCTURE.
	SECTION 8 - SPECIAL PROTECTION INFORMATION
	RESPIRATORY PROTECTION: ANDID CONTINUOUS BREATHING OF VAPORS AND SPRAY HIST.
	A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE
	TLV LIMITS.
	VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT
	INNALATION OF SOLVENT VAPORS.
	PROTECTIVE GLOVES: OPTIONAL
_	TIWESTITE GESTES WILLIAM
	EVE DOCTOTOMA: OLE V JAMES CONSTITUING LABOUR CODAY WITH WIGHT COT TIPE EVEN
	EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES.
,	SECTION 9 - SPECIAL PRECAUTIONS
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG. F.
•	EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING.
	OTHER PRECAUTIONS: USE ONLY AS DIRECTED, INTENTIAL HISUSE BY DILIBERATELY
	CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARNFUL OR FATAL.
	CONTRACTOR OF THE CHARLES OF THE OF LEAGUE OF ALL STATES
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YCAMORE
DATE OF PREP. B/12/B6 AUR COLOR 6

SECTION 1

MANUFACTURER: SEYMOUR OF SYCAMORE, INC.

917 CROSBY AVE., SYCAMORE, IL. 60178

EMERGENCY TELEPHONE NO. 815-895-9101

TRADE NAME: QUIK COLOR GLOSS BLACK

PRODUCT CLASS: AEROSOL - VINYL TOLUENE ALKYD ENAMEL

	SECTION 2	- Hazardou	is ingre	DIENTS		
			_			WAPOR PRESSUR
INGREDIENT - (CAS\$)	·	PERCENT	PPH	MG/N3	LEL	_aerosol cans
						40 P.S.I.
						€ 70 DEG. F
METHYLENE CHLORIDE						
(75-09-2)	ne			SECTION 2.		
TOLUENE (108-88-3)	DC.	6+37 1 CCE DO	100.0	OFFITTION 3	1.27	
METHYL ISOBUTYL KET	TANE	1.07	ייט מעווי יאר הא	205.0	1.40	
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(64742-86-7)				ND ND	J.1.V.	
VARNISH MAKERS & PA	INTER	4.64			1.10	
NAPHTHA (8030-30-				ND		
XYLENE		4.08		435.0	1.00	
(1330-20-7)	•			435		
PROPANE - (74-98-6)		21,0				
				1800.0		
ISOBUTANE - (75-28-	·5)	14.0	ND	ND	1.90	
	Q-UOLD TIN	E ACCEDTA	DI E	ACCEPTABLE	MAYTM	UN PEAK ABOVE THE
	WEIGHTED					NG CONCENTRATION
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						MAXIMUM DURATION
METHYLENE CHLORIDE	500 PPH	1,000	PPH	2,000 PP	Ħ	5 MINUTES IN
						ANY 2 HOURS.
TOLUENE	200 PPH	300	PPH	500 PP	H	10 MINUTUTES.
	CCCTION 7	N NOTON	DATA			
	SECTION 3	- LHISTCHE	. DHIH			
BOILING POINT: NA			VAPOR DE	ENSITY: HE	AVIER	THAN AIR
EVAPORATION RATE:	FASTER THAN	ETHER.	PERCENT	VOLATILE		WEIGHT PER
		<del></del>	BY VOLU	Æ;	85X	GALLON: NA
					<del></del>	
	SECTION 4	- FIRE AND	EXPLOS.	LUN DATA		
EL AGN POINT! ASPON	OL-10 DEG.	F (T.O.C.)	ın	i dee deut	TON 2	
FLASH POINT: _AEROS			E	L! SEE SECT	ION 2	
FLASH POINT: AEROS FLAMMABILITY CLASSI DOT: CONSUMER COM-	FICATION: N		E	LE SEE SECT	ION 2	



CALOR GLOSS B

UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL

P.2 of 6

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY HAY BE INEFFECTIVE, WATER MAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOG NOZZLES ARE PREFERABLE, WEAR GOGGLES AND SELF CONTAINED BREATHING APPARATUS.

#### SECTION 5 - HEALTH HAZARI

THRESHOLD LIMIT VALUE: SEE SECTION 2

#### METHYLENE CHLORIDE

(75-09-2)

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52 53 ACUTE OVEREXPOSURE - INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, NAUSEA, AND VOMITING, SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR IN-COORDINATION, UNCONCIOUSNESS, AND DEATH.

INHALATION - IRRITATES RESPIRATORY TRACT.

SKIN CONTACT - HILDLY IRRITATING TO SKIN, SKIN CONTACT MAY PRODUCE A BURN-ING SENSATION, PROLONGED OR REPEATED CONTACT HAY CAUSE SKIN TO BECOME RED, ROUGH AND DRY DUE TO THE REMOVAL OF NATURAL DILS AND MAY RESULT IN DER-MATITIS.

SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLAMMA-TION.

INGESTION - IT CAN IRRITATE THE GASTOINTESINAL TRACT. IT COULD PRODUCE

CHEMICAL PNEUMONIA IF VONITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY

ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN BEATH.

CHRONIC OVEREXPOSURE -- CAN CAUSE HEADACHE, MENTAL CONFUSION, FATIGUE, LOSS OF APPETITE, NAUSEA, VONITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL

DISTURBANCES. PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATOORY STUDIES OF rats and hice at high levels of exposure, there is no data showing a

RELATIONSHIP BETWEEN THESE STUDIES AND THE POTENTIAL AS A HUMAN CARCINGGEN.

EXCESSIVE EXPOSURE HAY CAUSE CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEY

EFFECTS.

#### FIRST AID:

EYE CONTACT - INNEDIATELY FLUSH WITH LARSE ANOUNTS OF MATER FOR AT 15 MINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE.

SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT - WASH CONTAMINATED AREA WITH SDAP AND WATER, A SOUTHING DINTHENT HAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING, REHOVE CONTAMINATED CLOTHING AND FOOTHEAR AND WASH CLOTHING BEFORE REUSE. DISCARD FOOTWEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION.

INHALATION - GET PERSON OUT OF CONTANINATED AREA TO FRESH AIR. IF

BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. DXYGEN HAY

BE ADMINISTERED, IF READILY AVAIABLE, SEEK MEDICAL ATTENTION

INTEDIATELY.

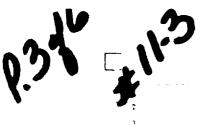
INGESTION - IF SMALLOWED DO NOT INDUCE VONITING, IF VONITING OCCURS SPONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRMAY CLEAR. NEVER GIVE ANYTHING BY HOUTH TO AN UNCONCIOUS PERSON. SEEK HEDICAL ATTENTION.

IMEDIATELY.

TOLUENE

(108 - 88 - 3)

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Duick Color Gloss ACUTE OVEREXPOSURE -OVEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM DEPRESSION PRODUCING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS. EYE CONTACT - SHORT-TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING. SKIN CONTACT - PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS. INHALATION - HIGH CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY BE SLIGHTLY IRRITATING TO NUCCUS HEMBRANES. INSESTION - LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (BREATHING) OF VONITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES IN THE LUNGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE. CHRONIC OVEREXPOSURE - RESPIRATORY TRACT IRRITATION. CENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS, LIVER AND KIDNEY DAMAGE. BRAIN CELL DAMAGE MAY RESULT FROM LONG TERM INMALATION OF TOLUENE VAPOR. ANIMAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVILS OF TOLUENE PRODUCED. CARDIAC SENSITIZATION, SUCH SENSITIZATION HAY CAUSE FATAL CHANGES IN HEART RYTHMS, RATS EXPOSED TO 1400 PPM OR 1200 PPM OF TOLLUENE FOR 14 HOURS PER DAY FOR 4 TO 5 MEEKS (RESPECTIVELY) EXHIBITED HIGH FREDUENCY HEARING DEFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE VAPORS (E.S. THE TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS. FIRST AIB: EYE CONTACT - FLUSH WITH WATER FOR 15 HINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION. SKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTAKINATED CLOTHING AND SHOES, FOLLOW BY WASHING WITH SOAP AND WATER, DO NOT REUSE CLOTHING OR SHOES UNTIL CLEANED. IF IRRITATION PERSISTS, BET\_MEDICAL ATTENTION. INHIALATION - REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL INGESTION - DO NOT INDUCE VOMITING, IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION. METHYL ISOBUTYL KETONE ACUTE OVEREXPOSURE -EYE CONTACT - VAPOR AND LIQUID MAY BE IRRITATING TO EYES, SKIN CONTACT - PROLONG OR REPEATED CONTACT MAY CAUSE DRYING, CRACKING, UR IRRITATION OF THE SKIN. INHALATION - HIGH CONCENTRATION OF VAPOR MAY CAUSE HEADACHE, WEAKNESS, GASTROINTESTINAL UPSET, AND MARCOSIS (SLEEPINESS, DIZZINESS, ETC.). CHRONIC EXPOSURE - NONE CURRENTLY KNOWN. ( SEE NOTE ) FIRST AID: EYE CONTACT - IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 HINUTES AND GET HEDICAL ATTENTION IF ANY SYMPTOMS ARE PRESENT AFTER WASHING.

(108-10-1)

SKIN CONTACT - INNEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 HINLITES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES AND GET MEDICAL

ATTENTION IF SYMPTOMS ARE PRESENT AFTER MASHING.

INHALATION - VAPORS ARE IRRITATING TO EYES, NOSE, AND THROAT, REMOVE FROM 52

53 EXPOSURE, TREAT SYMPTOMATICALLY, AND GET MEDICAL ATTENTION.

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NOTE: IN HUMANS, LEVELS OF 1000 PPM PROJUCE ONS DEPRESSION AND NARCOSIS, MORKERS EXPOSED TO MIRK AT CONCENTRATIONS UP TO 500 PPM, 30 MINUTES PER DAY OVER 5 YEARS COMPLAINED OF HEADACHE, MEAKNESS, EYE AND UPPER REPSPIRATORY TRACT IRRITATION, AND GASTROINTESTINAL SYMPTOMS. AT 200-400 PPM, EYE, NOSE, AND THROAT IRRITATIONS OCCURS WHILE AT 100 PPM, THE ONLY PROBLEM DISSERVED IS AN OBJECTIONABLE ODOR.

P.446

WHIRE COLORS

#### MINERAL SPIRITS

(64742-86-7)

ACUTE DUEREXPOSURE - CAN LEAD TO CENTRAL NERVOUS SYSTEM DEPRESSION PRODUCIMB SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS.
EYE CONTACT - SHORT TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE
IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE HORE IRRITATING.
SKIN CONTACT \_ PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING
AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.
INHILATION \_ HIGH CONCENTRATIONS OR PROLONGED EXPOSURE TO LOWER CONCENTRA\_
TIONS MAY BE SLIGHTLY IRRITATING TO MUCOUS HEMBRANES.
INGESTION \_ LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (BREATHING
IN) OF LIQUID MUST BE AVOIDED AS LIQUID CONTACT WITH THE LUNGS CAN RESULT
IN CHEMICAL PREUMONITIS AND PULMONARY EDEMA/HEMORRHAGE.

#### FIRST AID:

EYE CONTACT - FLUSH WITH WATER. IF PERSISTENT IRRITATION OCCURS, GET NEDICAL ATTENTION.

SKIN CONTACT - MASH WITH SOAP AND WATER, REMOVE CONTAMINATED CLOTHING AND DO NOT REUSE UNTIL LAINDERED, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION - REMOVE TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION - DO NOT INDUCE VOHITING EVEN THOUGH VONITING MAY OCCUR. IF VOHITING OCCURS, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.

#### **UARNISH MAKERS & PAINTER**

NAPHTHA (8030-30-6)

ACUTE OVEREXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AIB:

EYE CONTACT - FLUSH EYES WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 HINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANTILES OF WATER.

WASH CONTAMINATED CLOTHING DEFORE REUSE.

INHALATION - IF BREATHING DIFFICULTIES, BIZZINESS, OR LIGHTHEADEDNESS OCCUR
WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK
AIR FREE OF VAPORS, IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES,
ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING
STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK IMMEDIATE MEDICAL ATTENTION.
INGESTION - IF SWALLOWED, DO NOT INDUCE VONITING, SEEK IMMEDIATE MEDICAL
ADVICE AND/OR ATTENTION.

# MLENE

(1330-20-7)

ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

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SKIN CONTACT - MAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

INHALATION - IRRITANT TO UPPER RESPIRATORY SYSTEM, CAN CAUSE HEADACHE, NAUSEA, AND DIZZINESS.

INGESTION - MAY BE HARNEUL IF SHALLOWED.

CARCHIO GVEREXPOSIGNE --

POSSIBLE LIVER AND KIDNEY DAMAGE.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUAINTIES OF WATER FOR AT LEAST 15 HINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION. SKIN CONTACT - WASH SKIN WITH SOAP AND LARGE DUANITIES OF WATER AND SEEK MEDICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS. INHALATION - IF PREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INNEDIATE HEDICAL ATTENTION. INSESTION - IF SHALLOWED, DO NOT INDUCE VONITING. SEEK IMMEDIATE MEDICAL

#### SECTION 6 - REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OPEN FLAME.

INCOMPATABILITY: (MATERIALS TO AVOID) NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PROBUCE HAZARDOUS FUMES WHEN HEATED TO DECOMPOSITION, FUNES MAY CONTAIN CARBON DIGXIDE AND/OR CARBON MONOXIDE. FUNES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAPOR AND TRACES OF PHOSGENE.

HAZARDOUS POLYMERZATION: WILL NOT OCCUR.

ADVICE AND/OR ATTENTION.

32 CONDITIONS TO AVOID: NA

#### SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF 36 IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA. WIPE UP WITH IMERT MATERIALS 37 38 AND PLACE IN APPROPRIATE CONTAINER. 39.

WASTE DISPOSAL HETHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME COMPACTOR. DO NOT PUNCTURE.

#### SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY HIST. 47 A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE 48 TLV LIMITS.

50 VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT 51 INHALATION OF SOLVENT VAPORS.

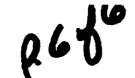
PROTECTIVE GLOVES: OPTIONAL

EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES.

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#### SECTION 9 - SPECIAL PRECAUTIONS



PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG. F. EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING.

OTHER PRECAUTIONS: USE ONLY AS DIRECTED, INTENTIAL MISUSE BY DILIBERATELY CONCENTRATING VARIORS AND INHALING CONTENTS CAN BE HARMFUL OR FATAL.

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MUIK COLOR GLOSS RED

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY HAY BE INEFFECTIVE, WATER HAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOG NOZZLES ARE PREFERABLE, WEAR GOGGLES AND SELF CONTAINED BREATHING APPARATUS.

#11-4 p245

SECTION 5 - HEALTH HAZARD

THRESHOLD LIMIT VALUE: SEE SECTION 2

TITANILA DIOXIDE

(13463-67-7) (AS DUST)

DVEREXPOSURE - NONE KNOWN

NOTE: INHALATION TESTS IN RATS: DUST FROM DRIED PRODUCTS PRODUCED AN INERT OR NUISANCE DUST RESPONSE IN THE LUNGS.

#### HETHYLENE CHLORIDE

(75-09-2)

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ACUTE OVEREXPOSURE - INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, NAUSEA, AND VONITING, SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR INCONCIOUSNESS, AND DEATH.

INHALATION - IRRITATES RESPIRATORY TRACT.

SKIN CONTACT - MILDLY IRRITATING TO SKIN. SKIN CONTACT MAY PRODUCE A BURN-ING SENSATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED, ROUGH AND DRY DUE TO THE REMOVAL OF NATURAL DILS AND MAY RESULT IN DER-MATITIS.

SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLAMMA-TION.

INGESTION - IT CAN IRRITATE THE GASTOINTESINAL TRACT. IT COULD PRODUCE CHEMICAL PHEUMONIA IF VOHITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN DEATH.

CHRONIC OVEREXPOSURE - CAN CAUSE HEABACHE, MENTAL CONFUSION, FATIGUE, LOSS OF APPETITE, NAUSEA, VOMITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL DISTURBANCES, PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERNATITIS.

IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATOORY STUDIES OF RATS AND MICE AT HIGH LEVELS OF EXPOSURE, THERE IS NO DATA SHOWING A RELATIONSHIP BETWEEN THESE STUDIES AND THE POTENTIAL AS A HUMAN CARCINOGEN.

EXCESSIVE EXPOSURE MAY CAUSE CENTRAL MERVOUS SYSTEM, LIVER AND KIDNEY EFFECTS.

#### FIRST AID:

EYE CONTACT - IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT 15
HINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE.
SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT - WASH CONTAMINATED AREA WITH SOAP AND WATER, A SOUTHING DINTMENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING, REMOVE

CONTAMINATED CLOTHING AND FOOTHEAR AND WASH CLOTHING BEFORE REUSE. DISCARD

FOOTWEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION.
INHALATION - GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR. IF

BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. DXYGEN MAY BE ADMINISTERED, IF READILY AVAIABLE, SEEK MEDICAL ATTENTION

INMEDIATELY.

INGESTION - IF SWALLOWED BO NOT INDUCE VONITING, IF VONITING OCCURS SPONTANEOUSLY, POSITION INBIVIDUAL'S HEAD TO KEEP AIRWAY CLEAR, NEVER GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON, SEEK MEDICAL ATTENTION.

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DETITION FOR COAT

ATE OF PREP. 8/12/86

FOR COATINGS, RESINS AND RELATED NATERIALS FIRE

\_\_\_ SECTION 1

MANUFACTURER: SEYHOUR OF SYCAMORE, INC. 917 CROSBY AVE., SYCAMORE, IL. 60178 EMERGENCY TELEFHONE NO. 815-895-9101

TRADE NAME: QUIK COLOR GLOSS RED

PRODUCT CLASS: AEROSOL - VINYL TOLUENE ALKYD ENAMEL MANUFACTURERS CODE IDENTIFICATION: 00-0011-0004

<u> </u>	SECTION 2 -	HAZARDOL	is ingre	DIENTS			1=	1
			274 17 17/	TWA)/OSHA P		VAPOR F	167	1
INGREDIENT - (CAS#)	٦ ٫						-	;
THOUSENTER! - I AUGUS	·	THE				40 P. S		1
						9 70 I	1 400	-
TITANIUM DIOXIDE	•	.13	MTI	15.0	MD		'걸음'	1 ( <b>X</b> 1)
(13463-67-7) (AS		f.&\w		15/1V		~	. 13 <b>.</b> 5	[ II ]
HETHYLENE CHLORIDE		34.81		350.0	13.00			i ilia aa Lii aa
(75-09-2)								
TOLUENE		13.41	100.0	375.0	1,27		出出	. !
(108-88-3)							ĽΞ	4
MINERAL SPIRITS				ND			ЦŹ	1
(64742-66-7)			ND				י נא	ũ
VARNISH MAKERS & PA	AINTER	3.86	300.0	1,350.0	1.10		ΡĞ	= :
NAPHTHA (8030-30-			NB	-		•		13 to
PROPANE - (74-98-6)		21.0	MD		2.30		_ U	_ 1
	•		1000.0	1800.0				1 (
ISOBUTANE - (75-28-	-5)	14.0	NB	ND	1.90			
	8-HOUR TIME							
	WEIGHTED			ACCEPTANCE		·	MOITAS	
MATERIAL	AVERAGE	CONCENT	RATION	FOR AN 8-H				
						MAXIMUM DUR		
HETHYLENE CHLORIDE	500 PPH	1,000	PPM	2,000 PP				
						ANY 2 HOUR		
TOLUENE	200 PPH	300	PPH	500 PP	Ħ	10 MINUTUT	ÆS.	
		2 222						
	SECTION 3 -	PHYSILAL	. BAIA					
								_
ANT THE POTATE AND			HADOD D		**************************************	TIAL ATO		
BOILING POINT: NA			VAPUR D	ENSITY: HE	WATER I	HAN HIN		

42 EVAPORATION RATE: FASTER THAN ETHER, PERCENT VOLATILE HEIGHT PER

43
44
BY VOLUME: BSX GALLON: NA

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2

50 FLAMMABILITY CLASSIFICATION: NA

DOT: CONSUMER COMMODITY ORNO

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EXTINGUISHING MEDIA: USE CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL

CAN.

MOTERIATELY.

# ANIK COLOR GLOSS REI # 11-4

TOLUENE

(108-88-3)

	(108-88-	(3)
1	A	CUTE OVEREXPOSURE -
2	n	IVEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM
3	_	EPRESSION PROTUCING SUCH EFFECTS AS HEATACHE, DIZZINESS, NAUSEA, AND LOSS
:	-	F CONSCIOUSNESS
	_	YE CONTACT - SHORT-TERN LIQUID OR VAPOR CONTACT HAY RESULT IN SLIGHT EYE
ć	-	RRITATION, PROLONGED AND REPEATED CONTACT HAY BE MORE IRRITATING.
,	_	
8	_	KIN CONTACT - PROLDINGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING
	-	AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.
		INHALATION - HIGH CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY
10	_	E SLIGHTLY IRRITATING TO MUCDUS MEMERANES.
11	I	NGESTION - LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION
12	(	Breathing) of yonitus into the lungs must be avoided as even small
13	9	NUANTITIES IN THE LLINGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULLMONARY
14	Ε	IDENA/HEHORRHAGE
15	0	HRONIC OVEREXPOSURE - RESPIRATORY TRACT IRRITATION.
16		ENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.
17	_	IVER AND KIDNEY DAMAGE.
18	_	RAIN CELL DAMAGE MAY RESULT FROM LONG TERM INHALATION OF TOLUENE VAPOR.
19		WINAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVLS OF TOLUENE PRODUCED
20		CARDIAC SENSITIZATION, SUCH SENSITIZATION WAY CAUSE FATAL CHANGES IN HEART
21		
22		RYTHINS, RATS EXPOSED TO 1400 PPH OR 1200 PPH OF TOLLIENE FOR 14 HOURS PER
23	-	NAY FOR 4 TO 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREQUENCY HEARING
24	_	REFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE
25	Y	APORS (E.G. THE TLV) HAVE PRODUCED CARBIAC EFFECTS IN HUMANS.
<b></b> -i		
26		FIRST AID;
27		YE CONTACT - FLUSH WITH WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN.
28	6	ET MEDICAL ATTENTION.
29	_	IKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND
30		THOES, FOLLOW BY WASHING WITH SOAP AND WATER, DO NOT REUSE CLOTHING OR
31	S	SHOES UNTIL CLEANED. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.
32	1	INHIALATION - REMOVE VICTIN TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING
33	I	S DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL
34	A	ATTENTION.
35	I	INGESTION - DO NOT INDUCE VOHITING. IF VOHITING OCCURS SPONTANEOUSLY, KEEP
36	- H	EAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LUNGS. GET
37,	*	EDICAL ATTENTION.
38		
39	MINERAL S	PIRITS
	(64742-8	
41		CUTE OVEREXPOSURE - CAN LEAD TO CENTRAL NERVOUS SYSTEM DEPRESSION PRODUC-
42		ING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS.
43		LYE CONTACT - SHORT TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE
44		RRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING.
45		XIN CONTACT PROLONGED AND REPEATED LIDUID CONTACT CAN CAUSE DEFATTING
46		WE DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERNATITIS.
47		NHILATION _ HIGH CONCENTRATIONS OR PROLONGED EXPOSURE TO LOWER CONCENTRA_
48		<del>-</del>
49		TONS MAY BE SLIGHTLY IRRITATING TO MUCOUS MEMBRANES.
50		MGESTION _ LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (BREATHING
		IN) OF LIQUID MUST BE AVOIDED AS LIQUID CONTACT WITH THE LUNGS CAN RESULT
51.	I	N CHEMICAL PHEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE.
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53		FIRST AID:
54	E	YE CONTACT - FLUSH WITH MATER, IF PERSISTENT IRRITATION OCCURS, GET
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# 11-4 DUIK COLOR BLOGS

SKIN CONTACT - WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND DO NOT REUSE UNTIL LAUNDERED, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION - REMOVE TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL ATTENTION.

INGESTION - DO NOT INDUCE VONITING EVEN THOUGH VONITING MAY OCCUR. IF VONITING OCCURS, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET HEDICAL ATTENTION.

### VARNISH MAKERS & PAINTER

NAPHTHA (8030-30-6)

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ACUTE OVEREXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUANITIES OF WATER FOR AT LEAST 15 HINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE DUANITIES OF WATER.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTH-ADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK IMMEDIATE MEDICAL ATTENTION. INDESTION - IF SHALLOMED, DO NOT INDUCE VONITING. SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

#### SECTION 6 - REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OPEN FLAME.

INCOMPATABILITY: (MATERIALS TO AVOID) NOME KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE HAZARDOUS FUMES WHEN HEATED TO DECOMPOSITION, FUMES MAY CONTAIN CARBON DIOXIDE AND/OR CARBON MONOXIDE. FUMES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAPOR AND TRACES OF PHOSGENE.

HAZARDOUS POLYMERZATION: WILL NOT OCCUR.

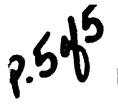
#### CONDITIONS TO AVGID: NA

#### SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA. WIPE UP WITH INERT MATERIALS AND PLACE IN APPROPRIATE CONTAINER.

WASTE DISPOSAL HETHOOS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME COMPACTOR. DO NOT PUNCTURE.

SECTION 8 - SPECIAL PROTECTION INFORMATION



RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY HIST. A SELF CONTAINED RECATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE

#11.4

TLV LIMITS. VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT INHALATION OF SOLVENT VAPORS. PROTECTIVE GLOVES: OFTIONAL EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES. SECTION 9 - SPECIAL PRECAUTIONS PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG. F. EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING. OTHER PRECAUTIONS: USE ONLY AS DIRECTED, INTENTIAL HISUSE BY DILIBERATELY CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARNFUL OR FATAL. 

FOR COATINGS, RESINS AND RELATED MATERIALS

SECTION 1

MANUFACTURER: SEYHOUR OF SYCAMORE, INC. 917 DROSBY AVE., SYCAMORE, IL. 60178 EMERGENCY TELEPHONE NO. 815-895-9101

TRADE NAME: DUIK COLOR GLOSS DARK GREEN

	SECTION 2 -	· · · · · · · · · · · · · · · · · · ·				
	_			nya)/dsha p		VAPOR PRESSU
INGREDIENT - (CAS#)	F	PERCENT	PPH	MG/M3	LEL	AEROSOL CAN
						40 P.S.I.
HERMONE ON COURSE		T. 85	444.4	750.0	17 65	<b>€</b> 70 DEG. F
METHYLENE CHLORIDE (75-09-2)	DCI			350.0 SECTION 2.		
TOLUENE	res	14.10	100.0		1.27	
(109-88-3)	PFI			SECTION 2.		
HINERAL SPIRITS	•	<b>₁29</b>	NED	ND	.70	
(64742 <del>-86-</del> 7)			NB	ND	_	
VARNISH MAKERS & PA	INTER	3.79	300.0	1,350.0	1.10	
NAPHTHA (9030-30-	6)		ND	MD		
XYLENE		<b>.49</b>	100.0	435.0	1.00	
(1330-20-7)			100	435		·
PROPANE - (74-98-6)		21.0	NB	ND	2.30	
			1000.0			
ISOBUTANE - (75-28-	5)	14.0	HED	MD_	1.90	
	9-HOUR TIME	ACCEPTA	DE	ACCEPTAN E	MAYTM	im peak above th
	WEIGHTED	CEILING			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	IG CONCENTRATION
MATERIAL	AVERAGE			FOR AN 8-H		
				CONCENTRA	TION P	MAXIMUM DURATION
HETHYLENE CHLORIDE	500 PPH	1,000	PPH	2,000 PP	H	5 HINUTES IN
						ANY 2 HOURS.
TOLUENE	200 PPH	300	PPH	500 PP	H	10 KINUTUTES.
	SECTION 3 -	PHYSICAL	DATA			
BOILING POINT: NA			VAPOR I	ENSITY: HE	AVIER 1	HAN AIR
EVAPORATION RATE:	faster than e					WEIGHT PER
			BY VOLUM	E:	85X	GALLON: NA

FLASH POINT: AEROSOL-10 BEG. F (T.O.C.) LEL: SEE SECTION 2

FLAMMABILITY CLASSIFICATION: NA

DOT: CONSUMER COMMODITY ORNO

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EXTINGUISHING MEDIA: USE CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL CAN.

# 11" HUIK COLOR GLOSS DARK GREEL

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY MAY BE INEFFECTIVE, WATER MAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOG MOZZLES ARE PREFERABLE, WEAR GOOGLES AND SELF CONTAINED BREATHING APPARATUS.

SECTION 5 - HEALTH HAZARD

THRESHOLD LIHIT VALUE: SEE SECTION 2

#### METHYLENE CHLORIDE

(75-09-2)

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55 56 ACUTE OVEREXPOSURE - INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, NAUSEA, AND VONITING. SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR INCONDINATION, UNCONCIOUSNESS, AND DEATH.

INHALATION - IRRITATES RESPIRATORY TRACT.

SKIN CONTACT - MILDLY IRRITATING TO SKIN, SKIN CONTACT MAY PRODUCE A BURN-ING SENSATION, PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED, ROUGH AND DRY DUE TO THE REMOVAL OF NATURAL OILS AND MAY RESULT IN DER-MATITIS.

SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLAMMA-

INGESTION - IT CAN IRRITATE THE GASTDINTESINAL TRACT, IT COULD PRODUCE CHEMICAL PHEUMONIA IF VOMITING RESULTS IN ASPIRATION INTO THE LUNGS, IT MAY ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN DEATH.

CHRONIC OVEREXPOSURE - CAN CAUSE HEADACHE, MENTAL CONFUSION, FATIQUE, LOSS OF APPETITE, NAUSEA, VOMITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL DISTURBANCES, PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATORY STUDIES OF

RATS AND NICE AT HIGH LEVELS OF EXPOSURE. THERE IS NO DATA SHOWING A
RELATIVONSHIP DETHERN THESE STUDIES AND THE POTENTIAL AS A MOMAN CARCINOGEN.
EXCESSIVE EXPOSURE MAY CAUSE CENTRAL NERVOUS SYSTEM. LIVER AND KIDNEY

EFFECTS.

FIRST AID:

EYE CONTACT - IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT 15 MINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE. SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT - WASH CONTAMINATED AREA WITH SDAP AND WATER. A SOUTHING OINTHENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING. REMOVE

CONTAMINATED CLOTHING AND FOOTWEAR AND WASH CLOTHING BEFORE REUSE. DISCARD

FOOTWEAR WHICH CANNOT BE DECONTAMINATED, SEEK HEDICAL ATTENTION,
INHALATION - GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR, IF

BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. DXYGEN NAY

BE ADMINISTERED, IF READILY AVAIABLE, SEEK MEDICAL ATTENTION

IMEDIATELY.

INGESTION - IF SWALLOWED DO NOT INDUCE VOMITING, IF VOMITING OCCURS

SPONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRWAY CLEAR, NEVER
GIVE ANYTHING BY HOUTH TO AN UNCONCIOUS PERSON, SEEK HEDICAL ATTENTION,

IMEDIATELY.

#### TOLLIENE

(10<del>0-88-</del>3)

ACUTE OVEREXPOSURE -

OVEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM

DEPRESSION PRODUCING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS

4	OF CONSCIOUSNESS. GLOSS DARK GREEN #/
	EYE CONTACT - SHORT-TERN LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE
	IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE HORE IRRITATING,
	SKIN CONTACT - FROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING
1	AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.
2	INHALATION - HIGH CONCENTRATIONS OR FROLONGED TO LOWER CONCENTRATIONS MAY
3	BE SLIGHTLY IRRITATING TO MUCDUS MEMBRANES.
٤	INGESTION - LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION
٥	(BREATHING) OF VOHITUS INTO THE LUNGS HUST BE AVOIDED AS EVEN SHALL
6	QUANTITIES IN THE LUNGS MAY RESULT IN CHEMICAL PREUMONITIS AND PULMONARY
7	EDENA/HENORRHAGE,
8 .	CHRONIC OVEREXPOSURE - RESPIRATORY TRACT IRRITATION.
9.	CENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.
10	LIVER AND KIDNEY DAMAGE.
11	BRAIN CELL DAMAGE MAY RESULT FROM LONG TERM INMALATION OF TOLUENE VAPOR.
12	ANIHAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVES OF TOLUENE PRODUCED
13	CARDIAC SENSITIZATION, SUCH SENSITIZATION NAY CAUSE FATAL CHANGES IN HEART
14	RYTHMS, RATS EXPOSED TO 1400 PPH OR 1200 PPH OF TOLLIENE FOR 14 HOURS PER
15	DAY FOR 4 TO 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREQUENCY HEARING
6	DEFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE
7	VAPORS (E.G. THE TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS.
8	
10	FIRST AIB:
10	EYE CONTACT - FLUSH WITH WATER FOR 15 HINUTES WHILE HOLDING EYELIDS OPEN.
21	GET MEDICAL ATTENTION.
12	SKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTAKINATED CLOTHING AND
3	SHOES, FOLLOW BY WASHING WITH SOAP AND WATER, DO NOT REUSE CLOTHING OR
4	SHOES UNTIL CLEANED, IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.
5	INHIALATION - REMOVE VICTIM TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING
6	IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL
7	ATTENTION.
8	INGESTION - DO NOT INDUCE VONITING, IF VONITING OCCURS SPONTANEOUSLY, KEEP
9	HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LUNGS, GET
30	MEDICAL ATTENTION,
31	
32 MINER	AL SPIRITS
33 (6474	12-86-7)
34	acute overexposure - can lead to central nervous system depression produc-
35	ING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS.
36	EYE CONTACT - SHORT TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE
37	IRRITATION. PROLONGEB AND REPEATED CONTACT MAY BE MORE IRRITATING.
38	SKIN CONTACT _ PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING
39	AND DRYING OF THE SKIN WHICH HAY RESULT IN SKIN IRRITATION AND DERNATITIS.
40	INHILATION _ HIGH CONCENTRATIONS OR PROLONGED EXPOSURE TO LOWER CONCENTRA_
11	TIONS HAY BE SLIGHTLY IRRITATING TO MUCOUS HEMBRANES.
12	INGESTION _ LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (BREATHING
43	IN) OF LIBUID MUST BE AVOIDED AS LIGIUD CONTACT WITH THE LUNGS CAN RESULT
44	IN CHEMICAL PHEUMONITIS AND PULMONARY EXEMA/HEMORRHAGE.
45	
46	FIRST AID:
47	EYE CONTACT - FLUSH WITH WATER, IF PERSISTENT IRRITATION OCCURS, GET
48	MEDICAL ATTENTION.
49	SKIN CONTACT - WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND
50	DO NOT REUSE UNTIL LAUNDERED. IF PERSISTENT IRRITATION OCCURS, GET MEDICAL
51;	ATTENTION.
52	INHALATION - REMOVE TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS
53	DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET HEDICAL
· · ·	ATTENTION.
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55 56 57 INGESTION - DO NOT INDUCE VOHITING EVEN THOUGH VOHITING MAY OCCUR. IF VOHITING OCCURS, KEEP HEAD BELOW HIFS TO FREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.

# varnish makers & painter

NAPHTHA (8030-30-6)

ACUTE OVEREXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUANITIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANITIES OF WATER. WASH CONTAMINATED CLOTHING BEFORE REUSE,

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR
WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK
AIR FREE OF VAPORS, IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES,
ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING
STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK IMMEDIATE MEDICAL ATTENTION.
INGESTION - IF SHALLOWED, DO NOT INDUCE VONITING, SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

# XYLENE

(1330-20-7)

ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - HAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

INHA: / = = IRRITANT TO UPPER RESPIRATORY SYSTEM, CAN CAUSE HEADACHE,

NAME DIZZINESS.

IA - HAY BE HARNFUL IF SHALLOWED.

OVEREXPOSURE -

FISSIBLE LIVER AND KIDNEY DAMAGE.

#### FIRST AIB:

EYE CONTACT - FLUSH EYES WITH LARGE DUAINTIES OF WATER FOR AT LEAST 15 HINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH SKIN WITH SOAP AND LARGE QUANTITIES OF WATER AND SEEK

HEDICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR
MHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK
AIR FREE OF VAPORS, IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES,
ADMINISTER DXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING
STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK IMMEDIATE MEDICAL ATTENTION,
INGESTION - IF SMALLOWED, DO NOT INDUCE VONITING. SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

#### SECTION 6 - REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OPEN FLAME.

INCOMPATABILITY: (MATERIALS TO AVOID) NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: NAY PRODUCE HAZARDOUS FUNES WHEN HEATED

P.H. S COLOSRED COLORED CREED GREED P. SYLIK COLOSS GLOSS GREEN GREEN

TO DECOMPOSITION, FUMES MAY CONTAIN CARBON DIOXIDE AND/OR CARBON MONOXIDE, FUMES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAFOR AND TRACES OF PHOSGENE.

	CONDITIONS TO AVOID: NA
	SECTION 7 - SPILL OR LEAK PROCEDURES
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA. WIPE UP WITH INERT MATERIAL AND PLACE IN APPROPRIATE CONTAINER.
	MASTE DISPOSAL METHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME COMPACTOR, DO NOT PUNCTURE.
	SECTION B - SPECIAL PROTECTION INFORMATION
	RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY MIST. A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE TLV LIMITS.
	VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT INHALATION OF SOLVENT VAPORS.
	PROTECTIVE GLOVES: OPTIONAL
	EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES.
	SECTION 9 - SPECIAL PRECAUTIONS
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG. F. EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING.
	OTHER PRÉCAUTIONS: USE ONLY AS DIRECTED. INTENTIAL HISUSE BY DILIBERATELY CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARNFUL OR FATAL.
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# FOR COATINGS, RESINS AND RELATED MATERIALS

## SECTION 1

MANUFACTURER: SEYHOUR OF SYCAMORE, INC. 917 CROSBY AVE., SYCAMORE, IL. 60178 EMERGENCY TELEPHONE NO. 815-895-9101

TRADE NAME: DUIK COLOR GLOSS YELLOW

PRODUCT CLASS: AEROSOL - VINYL TOLUENE ALKYD ENAMEL MANUFACTURERS CODE IDENTIFICATION: 00-0011-0034

CECTION	2 -	HAZADON'S IC	INGREDIENTS
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1.			ACC	SIH TLV(	TWA)/OSHA F	EL	VAPOR PRE	SSU ∰ 🗀
2	INGREDIENT - (CAS\$)		PERCENT	PPH.		LEI	AEROSOL_	CAN E
3							40 P.S.	. FO
4.			*				₽ 70 DEC	3. F∪~
5	TITANIUM DIOXIDE		2.05			ND.		L-1-
6	(13463-67-7) (AS		_	NED	ND			
7	METHYLENE CHLORIDE (75-09-2)		36,40	100.0	350.0	13.00	)	117
8	(75-09-2)	PEL	- SEE BU	DITON OF	SECTION 2			ü
9	TOLUENE (108-88-3)						7	
0								
1	HINERAL SPIRITS		11					
2	(64742-86-7)			ND	. –			
3	VARNISH MAKERS & PA							
4	NAPHTHA (8030-30-	·6)		N33	ND			
6	XYLENE	4	1.19		435.0	1.00	)	
7	(1330-20-7)				435	5 70		
ž.	_PROPANE (74-98-6)		21.0		ND		)	
9	7000/FANE /75 00				1800.0			
0	ISOBUTANE - (75-28-	2)	14.0	NU	MU	1.90	)	
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5	HETHYLENE CHLORIDE	SAN DOM	1 000	DOM				
6	URITHIEFE CULDATTE	300 PFH	1,000					
7	TOLLIENE	200 PPH	300	DOM	SAN DE	)A4	<u>any 2 hours.</u> 10 hinututes	`
8	700076	200 1711			500 FF		29 1121101012	··
9		SECTION 3 -	PLINCTON	DATA				
10		SCOTION S	THIOLOGE	- 101111				
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2	POILING POINT: NA			UAPINE TH	ENSITY: HE	AUTER	THAN ATR	
3	EGELINO I GENTI I III			V(V CA) 24	LNOX111			
4	EVAPORATION RATE:	FASTER THAN	FTHER.	DEDCENT	UN ATTI F		WEIGHT PER	
5	CALL CALLED CHAIL	THOUSEN THE T		BY WOLL		85X	GALLON:	NA
6		······································				<del></del>		
7								
E		SECTION 4 -	FIRE AND	EXPLOS	ION DATA			
9;			7 614- 144					
ō								
1	FLASH POINT: AEROS	OL-10 DEG. F	(T.O.C.	) ពេ	Li SEF SFM	ION 2		
2	FLAMMABILITY CLASSI							·
3	DOT: CONSUMER COM							

EXTINGUISHING MEDIA: USE CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL DO 25

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY MAY BE INEFFECTIVE, WATER MAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOG MOZZLES ARE PREFERABLE, WEAR GOGGLES AND SELF CONTAINED BREATHING APPARATUS.

SECTION 5 - HEALTH HAZARIN

THRESHOLD LIMIT VALUE: SEE SECTION 2

TITANIUM DIOXIDE

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(13463-67-7) (AS DUST)

OVEREXPOSURE - NONE KNOWN

NOTE: INHALATION TESTS IN RATE: DUST FROM DRIED PRODUCTS PRODUCED AN INERT OR NUISANCE DUST RESPONSE IN THE LUNGS.

#### METHYLENE CHLORIDE

(75-09-2)

ACUTE OVEREXPOSURE - INHALATION OF "VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, NAUSEA, AND VOHITING, SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR INCOORDINATION, UNCONCIDUSNESS, AND DEATH.

INHALATION - IRRITATES RESPIRATORY TRACT.

SKIN CONTACT - HILDLY IRRITATING TO SKIN, SKIN CONTACT MAY PRODUCE A BURN-ING SENSATION, PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED, ROUGH AND DRY DUE TO THE REMOVAL OF NATURAL DILS AND MAY RESULT IN DER-MATITIS.

SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLANMA-TION:

INGESTION - IT CAN IRRITATE THE GASTOINTESINAL TRACT. IT COULD PRODUCE CHEMICAL PNEUMONIA IF VOMITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN DEATH.

CHRONIC OVEREXPOSURE - CAN CAUSE HEADACHE, HENTAL CONFUSION, FATIQUE, LOSS OF APPETITE, HAUSEA, VOHITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL DISTURBANCES. PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERNATITIS. IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATOORY STUDIES OF

RATS AND MICE AT HIGH LEVELS OF EXPOSURE. THERE IS NO DATA SHOWING A RELATIONSHIP BETWEEN THESE STUDIES AND THE POTENTIAL AS A HUMAN CARCINOGEN. EXCESSIVE EXPOSURE MAY CAUSE CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEY EFFECTS.

#### FIRST AID:

EYE CONTACT - INMEDIATELY FLUSH WITH LARGE ANOUNTS OF WATER FOR AT 15 MINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE. SEEK MEBICAL ATTENTION IMMEDIATELY.

SKIN CONTACT - WASH CONTAMINATED AREA WITH SOAP AND WATER. A SOOTHING DINTMENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING. REMOVE CONTAMINATED CLOTHING AND FOOTWEAR AND WASH CLOTHING BEFORE REUSE. DISCARD FOOTWEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION.

INHALATION - GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR. IF BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. OXYGEN MAY BE ADMINISTERED, IF READILY AVAILABLE. SEEK MEDICAL ATTENTION

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Auk INGESTION - IF SHALLOWED DO NOT INTUCE VOHITING, IF VOHITING OCCURS SPONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRWAY CLEAR, NEVER COLOR GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON, SEEK HEDICAL ATTENTION. IMMEDIATELY.

RLLOW

#### TOLUENE

(108-88-3)

ACUTE OVEREXPOSURE -

OVEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM

DEPRESSION PRODUCING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS.

EYE CONTACT - SHORT-TERN LIQUID OR VAPOR CONTACT HAY RESULT IN SLIGHT EYE IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING.

SKIN CONTACT - PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.

INHALATION - HIGH CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY BE SLIGHTLY IRRITATING TO MUCOUS MEMBRANES.

14 INGESTION - LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION

(Breathing) of vonitus into the lungs must be avoided as even small

QUANTITIES IN THE LUNGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULMONARY EDEHA/HEHORRHAGE.

CHRONIC DVEREXPOSURE - RESPIRATORY TRACT IRRITATION.

CENTRAL MERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

LIVER AND KIDNEY DAMAGE.

BRAIN CELL DAMAGE MAY RESULT FROM LONG TERM INHALATION OF TOLLIENE VAPOR. ANIMAL STUBLES HAVE SHOWN THAT INHALATION OF HIGH LEVILS OF TOLLIENE PRODUCED CARDIAC SENSITIZATION, SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART RYTHMS. RATS EXPOSED TO 1400 PPM OR 1200 PPM OF TOLUENE FOR 14 HOURS PER DAY FOR 4 TO 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREDLENCY HEARING

DEFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE VAPORS (E.G. THE TLV) HAVE PRODUCED CARBLAC EFFECTS IN HUMANS.

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#### FIRST AID:

30 EYE CONTACT - FLUSH WITH WATER FOR 15 HINUTES WHILE HOLDING EYELIDS OPEN. 31

SET MEDICAL ATTENTION.

32 SKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND 33 SHOES, FOLLOW BY WASHING WITH SOAP AND WATER, DO NOT REUSE CLOTHING OR SHOES UNTIL CLEANED, IF IRRITATION PERSISTS, GET MEDICAL ATTENTION. 35 INHIALATION - REMOVE VICTIM TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING

IS DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL

ATTENTION.

INGESTION - DO NOT INDUCE VOMITING, IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LUNGS. GET

40 MEDICAL ATTENTION.

#### MINERAL SPIRITS

(64742-86-7)

acute overexposure – can lead to central nervous system depression produc-ING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS. EYE CONTACT - SHORT TERH LIQUID OR VAPOR CONTACT HAY RESULT IN SLIGHT EYE IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING, SKIN CONTACT \_ PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERHATITIS. INHILATION \_ HIGH CONCENTRATIONS OR PROLUNGED EXPOSURE TO LOWER CONCENTRA\_ TIONS MAY BE SLIGHTLY IRRITATING TO MUCDUS MEMBRANES. INGESTION \_ LIQUID INGESTION MAY RESULT IN VONITING: ASPIRATION (BREATHING

52 53 IN) OF LIGUID HUST BE AVOIDED AS LIQUUD CONTACT WITH THE LUNGS CAN RESULT 54 IN CHEMICAL PHEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE. 55

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DUIK COLOR GLOSS YELLOW FIRST AID: EYE CONTACT - FLUSH WITH WATER, IF PERSISTENT IRRITATION OCCURS, GET

MEDICAL ATTENTION.

SKIN CONTACT - WASH WITH SCIAP AND WATER, REMOVE CONTAMINATED CLOTHING AND DO NOT REUSE UNTIL LAUNDERED, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL

INHALATION - REHOVE TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT, GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET MEDICAL ATTENTION.

INGESTION - DO NOT INDUCE VOKITING EVEN THOUGH VOMITING MAY OCCUR. IF VOHITING OCCURS, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS, GET MEDICAL ATTENTION,

# **UARNISH MAKERS & PAINTER**

NAPHTHA (8030-30-6)

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ACUTE OVEREXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK INMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANTITIES OF WATER. WASH CONTAMINATED CLOTHING BEFORE REUSE.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INNEDIATE NEDICAL ATTENTION. INGESTION - IF SWALLOWED, DO NOT INDUCE VOMITING. SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

#### XYLENE

## (1330-20-1)

#### ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - MAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

INHALATION - IRRITANT TO UPPER RESPIRATORY SYSTEM, CAN CAUSE HEADACHE, NAUSEA, AND BIZZINESS.

INGESTION - MAY BE HARNFUL IF SHALLOWED.

CHRONIC OVEREXPOSURE -

POSSIBLE LIVER AND KIDNEY BAMAGE.

#### FIRST AIB:

EYE CONTACT - FLUSH EYES WITH LARGE QUAINTIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK INPEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH SKIN WITH SDAP AND LARGE QUANTITIES OF WATER AND SEEK MEDICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS.

INHALATION - IF BREATHING BIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS. VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INMEDIATE MEDICAL ATTENTION.

INGESTION - IF SWALLOWED, DO NOT INDUCE VOMITING, SEEK IMMEDIATE MEDICAL ADVICE AND/OR ATTENTION.

# WHIR COLOR GLOSS YELLOW # 11-31

# SECTION 6 - REACTIVITY DATA

	STABILITY: STARLE CONDITIONS TO AVOID: DO NOT STORE AROVE
	120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OFEN FLAME.
	INCOMPATABILITY: (MATERIALS TO AVOID) NONE KNOWN
	HAZARDOUS DECOMPOSITION PRODUCTS: NAY PRODUCE HAZARDOUS FUNES WHEN HEATED
	TO DECOMPOSITION, FUMES MAY CONTAIN CARBON DIDXIDE AND/OR CARBON MONOXIDE,
	FUMES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAPOR AND TRACES OF PHOSGENE.
	HAZARDOUS POLYMERZATION: WILL NOT OCCUR.
	CONDITIONS TO AVOID: NA
	SECTION 7 - SPILL OR LEAK PROCEDURES
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF
	IGNITION, AUGID BREATHING VAPORS, VENTILATE AREA, WIPE UP WITH INERT MATERIALS
	AND PLACE IN APPROPRIATE CONTAINER.
	WASTE DISPOSAL METHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH
	LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME
	COMPACTOR. DO NOT PUNCTURE.
_	SECTION 8 - SPECIAL PROTECTION INFORMATION
	RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY MIST.
	A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE
	TLV LINITS.
	VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT
	INVALATION OF SOLVENT VAPORS.
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	PROTECTIVE GLOVES: OPTIONAL
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•	EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES.
	SECTION 9 - SPECIAL PRECAUTIONS
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	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: BO NOT STORE ABOVE 120 DEG. F.
	EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING.
	OTHER PRECAUTIONS: USE ONLY AS DIRECTED, INTENTIAL HISUSE BY DILIBERATELY
	CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARNEUL OR FATAL.
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HATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED HATERIALS
THE COLOR OF

SECTION 1

917 CROSBY AVE., SYCAMORE, IL, 60178

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	SECTION 2 -	HAZARDO	JE INGREI	JIENTS			- <del>= -</del>	1 1
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(75-09-2)	PEL	- SEE BY						1 1
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(64742-86-7)			ND	ND			- nu 3	= 1
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NETHYLENE CHLURIUE	500 PPM	1,000	PPH	2,000 PP7	H			
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	SECTION 3 -	PHYSICAL	DATA					
							<del></del>	
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			<del></del>					
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EASTERNITUM MAIST !						GALLON:	NA	
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EAR-MONITON MONES			BY VOLU	E:	85X	- Ci Esseri		
EAR-CHOILTON MILES			BY VOLU	ME:	85X			
	SECTION 4 -				85X			
					85X			
					85X			
	SECTION 4 -	FIRE AND	D EXPLOSI	ION DATA				
FLASH POINT: AEROSC	SECTION 4 -	FIRE AND	D EXPLOSI	ION DATA				
FLASH POINT: AEROSC FLAMMABILITY CLASSIF	SECTION 4 - OL-10 DEG. F FICATION: NA	FIRE AND	D EXPLOSI	ION DATA				######################################
FLASH POINT: AEROSC	SECTION 4 - OL-10 DEG. F FICATION: NA	FIRE AND	D EXPLOSI	ION DATA				
FLASH POINT: AEROSC FLAMMABILITY CLASSIF DOT: CONSUMER COMMI	SECTION 4 - OL-10 DEG. F FICATION: NA ODITY ORNO	FIRE AND	D EXPLOSI	ION DATA	ION 2			
FLASH POINT: AEROSC FLAMMABILITY CLASSIF	SECTION 4 - OL-10 DEG. F FICATION: NA ODITY ORNO	FIRE AND	D EXPLOSI	ION DATA	ION 2			
	TRADE NAME: QUIK CO PRODUCT CLASS: AERO HANUFACTURERS CODE:  INGREDIENT - (CAS4)  TITANIUM BIOXIDE (13463-67-7) (AS ) METHYLENE CHLORIDE (75-09-2)  TOLIJENE (106-88-3) MINERAL SPIRITS (64742-86-7) VARNISH MAKERS & PA: NAPHTHA (8030-30-)  XYLENE (1330-20-7) PROPANE - (74-98-6)  ISOBUTANE - (75-28-2)  MATERIAL  METHYLENE CHLORIDE  TOLIJENE  TOLIJENE  BOILING POINT: NA	TRADE NAME: QUIK COLOR GLOSS BL PRODUCT CLASS: AEROSOL - VINYL HANUFACTURERS CODE IDENTIFICATIO  SECTION 2 -  INGREDIENT - (CAS\$) P  TITANIUM BIOXIDE  (13463-67-7) (AS DUST) HETHYLENE CHLORIDE (75-09-2) PEL TOLUENE (108-68-3) PEL HINERAL SPIRITS (64742-86-7) VARNISH MAKERS & PAINTER NAPHTHA (8030-30-6)  XYLENE (1330-20-7) PROPANE - (74-98-6)  ISOBUTANE - (75-28-5)  B-HOUR TINE NEIGHTED NATERIAL AMERAGE  NETHYLENE CHLORIDE 500 PPN  TOLUENE 200 PPN  SECTION 3 -	TRADE NAME: QUIK COLOR GLOSS BLUE PRODUCT CLASS: AEROGOL - VINYL TOLUENE MANUFACTURERS CODE IDENTIFICATION: 00-C  SECTION 2 - HAZARDOX  ACX INGREDIENT - (CAS\$) PERCENT  TITANIUM BIOXIDE 1.55  (13463-67-7) (AS DUST) METHYLENE CHLORIDE 37.33  (75-09-2) PEL - SEE BC (100-80-3) PEL - SEE BC (100-80-3) PEL - SEE BC (100-80-3) PEL - SEE BC (4742-86-7) VARNISH MAKERS & PAINTER 3.30  NAPHTHA (8030-30-6)  XYLENE 35  (1330-20-7) PROPANE - (74-98-6) 21.0  SHOUR TIME ACCEPTA WEIGHTED CERLINE MATERIAL AMERASE CONCENT  NETHYLENE CHLORIDE 500 PPH 1,000  TOLUENE 200 PPH 300  SECTION 3 - PHYSICAL  BOILING POINT: NA	EMERGENCY TELEPHONE NO. 815-895-9101  TRADE NAME: QUIK COLOR GLOSS BLUE PRODUCT CLASS: AEROGOL - VINYL TOLUENE ALKYD EN HANUFACTURERS CODE IDENTIFICATION: 00-0011-0035  SECTION 2 - HAZARDOUS INGREI  ACGIH TLV(T PERCENT PPM  TITANIUM BIOXIDE 1.55 NB  (13463-67-7) (AS DUST) ND  (13463-67-7) (AS DUST) ND  (75-09-2) PEL - SEE BOTTOM OF  TOLUENE 13.50 100.0  (109-69-3) PEL - SEE BOTTOM OF  TOLUENE 13.50 100.0  (109-69-3) PEL - SEE BOTTOM OF  NIMERAL SPIRITS .34 NB  (64742-86-7) ND  VARNISH MAKERS & PAINTER 3.30 300.0  NAPHTHA (8030-30-6) NB  VALENE .35 100.0  (1330-20-7) 100  PROPANE - (74-99-6) 21.0 NB  1000.0  ISOBUTANE - (75-28-5) 14.0 ND  TOLUENE CHLORIDE 500 PPM 1,000 PPM  TOLUENE 200 PPM 300 PPM  SECTION 3 - PHYSICAL DATA  BOILING POINT: NA VAPOR DE	TRADE MAME: QUIK COLOR GLOSS BLUE PRODUCT CLASS: AEROGOL - VINYL TOLUENE ALKYD ENAMEL MANUFACTURERS CODE IDENTIFICATION: 00-0011-003S    SECTION 2 - HAZARDOUS INGREDIENTS	EMERGENCY TELEPHONE NO. 815-895-9101  TRADE NAME: QUIK COLOR GLOSS BLUE PRODUCT CLASS; AEROGOL - VINYL TOLUENE ALKYD ENAMEL HANLFACTURERS CODE IDENTIFICATION: 00-0011-0035  SECTION 2 - HAZARDOUS INGREDIENTS  ACSIH TLV(TNA)/QSHA PEL INGREDIENT - (CAS\$) PERCENT PPH NG/N3 LEL  TITANIUM BIOXIDE 1.555 NB 15.0 ND ND (13463-67-7) (AS DUST) ND ND ND (13463-67-7) (AS DUST) ND ND ND (75-09-2) PEL - SEE BOTTOM OF SECTION 2.  TOLUENE 13.50 100.0 375.0 1.27 (106-86-3) PEL - SEE BOTTOM OF SECTION 2.  TOLUENE 13.50 100.0 375.0 1.27 (106-86-3) PEL - SEE BOTTOM OF SECTION 2.  HIMERAL SPIRITS .34 ND ND (64742-86-7) ND N	TRADE NAME: QUIK COLOR GLOSS BLUE PRODUCT CLASS: AEROGOL - VINYL TOLUENE ALKYD ENAMEL  HAMUFACTURERS CODE IDENTIFICATION: 00-0011-0035    SECTION 2 - HAZARDOUS INGREDIENTS	### ### ##############################

# 11-35 ANIK COLOR GLOSS BLUE

UNUSUAL FIRE AND EXPOSION HAZARDS: EXPOSURE TO HEAT MAY CAUSE BURSTING OF AEROSOL

SPECIAL FIRE FIGHTING PROCEDURES: WATER SPRAY MAY BE INEFFECTIVE, WATER MAY BE USED TO COOL CONTAINERS TO PREVENT BURSTING, IF WATER IS USED, FOR NOZZLES ARE PREFERABLE, WEAR GOGGLES AND SELF CONTAINED BREATHING APPARATUS.

SECTION 5 - HEALTH HAZARD

THRESHOLD LIMIT VALUE: SEE SECTION 2

TITANIUM DIOXIDE

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(13463-67-7) (AS DUST)

OVEREXPOSURE - NONE KNOWN

NOTE: INHALATION TESTS IN RATE: DUST FROM DRIED PRODUCTS PRODUCED AN INERT OR NUISANCE DUST RESPONSE IN THE LUNGS.

HETHYLENE CHLORIDE

(75-09-2)

ACUTE OVEREXPOSURE - INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, MAUSEA, AND VONITING, SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR IN-

COORDINATION, UNCONCIOUSNESS, AND DEATH.

INHALATION - IRRITATES RESPIRATORY TRACT.

SKIN CONTACT - HILDLY IRRITATING TO SKIN, SKIN CONTACT MAY PRODUCE A BURN-ING SENSATION, PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED.

ROUGH AND DRY DUE TO THE REMOVAL OF NATURAL DILS AND MAY RESULT IN DER-MATITIS.

SKIN ABSORPTION - RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT - AN IRRITANT OF THE EYES CAUSING PAIN, AND GENERAL INFLAMMA-

TION.

INCESTION - IT CAN IRRITATE THE GASTOINTESIMAL TRACT, IT COULD PRODUCE

CHEMICAL PHELMONIA IF VONITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY

ULTIMATELY REBILT IN UNCONSCIOUSNESS AND EVEN DEATH.

CHRONIC OVEREXPOSURE - CAN CAUSE HEADACHE, MENTAL CONFUSION, FATIGUE, LOSS OF APPETITE, WAUSEA, WOHITING, COUGH, LOSS OF SENSE OF BALANCE, AND VISUAL

DISTURBANCES, PROLONG OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

IT IS CONCLUDED TO BE AN ANIMAL CARCINOGEN BASED ON LABORATOORY STUDIES OF

RATS AND NICE AT HIGH LEVELS OF EXPOSURE. THERE IS NO DATA SHOWING A

<u>RELATIONSHIP BETWEEN THESE STUDIES AND THE POTENTIAL AS A HUMAN CARCINGGEN.</u>

EXCESSIVE EXPOSURE MAY CAUSE CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEY

EFFECTS.

FIRST AIB:

EYE CONTACT - INVEDIATELY FLUSH WITH LARSE ANOUNTS OF WATER FOR AT 15

MINUTES, HOLDING LIDS APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE.

SEEK MEBICAL ATTENTION INNEDIATELY.

SKIN CONTACT - WASH CONTAMINATED AREA WITH SDAP AND WATER. A SOUTHING

DINTHENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING, REMOVE

CONTAMINATED CLOTHING AND FOOTWEAR AND WASH CLOTHING BEFORE REUSE. DISCARD

FOOTHEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION.

INHALATION - GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR. IF

BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED, DXYGEN MAY

BE ADMINISTERED, IF READILY AVAIALRLE. SEEK MEDICAL ATTENTION

INCEDIATELY.

# 11-35

INGESTION - IF SWALLOWED BO NOT INDUCE VOMITING, IF VOMITING OCCURS SPONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRWAY CLEAR, NEVER GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON. SEEK HEDICAL ATTENTION. INVEDIATELY.

#### TOLUENE

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ACUTE OVEREXPOSURE -

OWEREXPOSURE CAN LEAD TO CENTRAL NERVOUS SYSTEM

DEPRESSION PRODUCING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS.

EYE CONTACT - SHORT-TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING.

SKIN CONTACT - PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH WAY RESULT IN SKIN IRRITATION AND DERNATITIS. INHALATION - HIGH CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY

BE SLIGHTLY IRRITATING TO MUCOUS NEMBRANES.

INSESTION - LIQUID INSESTION MAY RESULT IN VONITING: ASPIRATION (BREATHING) OF VOHITUS INTO THE LUNGS HUST BE AVOIDED AS EVEN SHALL

QUANTITIES IN THE LUNGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULMONARY EDEMA/HEHORRHAGE.

CHRONIC OVEREXPOSURE - RESPIRATORY TRACT IRRITATION.

CENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

LIVER AND KIDNEY DAMAGE.

BRAIN CELL DANAGE MAY RESULT FROM LONG TERM INMALATION OF TULLEDE VAPOR. animal studies have shown that inhalation of high levils of toluene produced CARDIAC SENSITIZATION. SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART RYTHMS, RATS EXPOSED TO 1400 PPH OR 1200 PPH OF TOLUENE FOR 14 HOURS PER DAY FOR 4 TO 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREILLENCY HEARING DEFECTS. THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLLIENE VAPORS (E.G. THE TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS.

FIRST AID:

EYE CONTACT - FLUSH WITH WATER FOR 15 HINUTES WHILE HOLDING EYELIDS OPEN. BET MEDICAL ATTENTION.

SKIN CONTACT - FLUSH WITH WATER WHILE REMOVING CONTAKINATED CLOTHING AND SHOES, FOLLOW BY WASHING WITH SOAP AND WATER, DO NOT REUSE CLOTHING OR SHOES UNTIL CLEANED, IF IRRITATION PERSISTS, GET MEDICAL ATTENTION. INHIALATION - REMOVE VICTIM TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INDESTION - DO NOT INDUCE VONITING, IF VONITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIGUID INTO THE LUNGS, GET MEDICAL ATTENTION.

#### MINERAL SPIRITS

#### (64742-86-7)

acute overexposure – can lead to central nervous system depression produc-ING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS, EYE CONTACT - SHORT TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE IRRITATION, PROLONGED AND REPEATED CONTACT MAY BE MORE IRRITATING. SKIN CONTACT PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS. INHILATION \_ HIGH CONCENTRATIONS OR PROLONGED EXPOSURE TO LOWER CONCENTRA\_ TIONS MAY BE SLIGHTLY IRRITATING TO MUCOUS MEDBRANES, INGESTION \_ LIQUID INGESTION MAY RESULT IN VONITING; ASPIRATION (BREATHING In) of Liquid Hust be avoided as Liquid Contact with the Lungs can result IN CHEMICAL PNEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE.

# 11-35

#### FIRST AID:

EYE CONTACT - FLUSH WITH WATER, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT - WASH WITH SOAP AND WATER, REMOVE CONTAMINATED CLOTHING AND DO NOT FEUSE UNTIL LAUNDERED, IF PERSISTENT IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION - REMOVE TO FRESH AIR AND PROVIDE DXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL

INGESTION - DO NOT INDUCE VOHITING EVEN THOUGH VONITING MAY OCCUR. IF VOHITING OCCURS, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIGUID INTO THE LUNGS, GET MEDICAL ATTENTION.

## VARNISH NAKERS & PAINTER

MAPHTHA (8030-30-6)

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55 50 ACUTE OVEREXPOSURE - CENTRAL NEVEROUS SYSTEM SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE DRRIJANT,

SKIN CONTACT - PROLONGED UR REPEATED CONTACT HAY CAUSE SKIN IRRITATION,

FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK INVEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANTITIES OF WATER.

WASH CONTAMINATED CLOTHING BEFORE REUSE. INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS, VICTIH SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DOYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, REGIN ARTIFICIAL RESPIRATION AND SEEK IMPEDIATE NEDICAL ATTENTION. INGESTION - IF SWALLOWED, DO NOT INDUCE VOMITING, SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

# XYLENE

## (1330-20-7)

#### ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - MAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

INHALATION - IRRITANT TO UPPER RESPIRATORY SYSTEM, CAN CAUSE HEADACHE,

NAUSEA, AND DIZZINEBS.

INGESTION - MAY BE HARNFUL IF SHALLOWED.

CHRONIC OVEREXPOSURE -

POSSIBLE LIVER AND KIDNEY DAMAGE.

FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUAINTIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK INVEDIATE MEDICAL ATTENTION.

skin contact — Wash skin with soap and large quantties of water and seek MEDICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR

WHEN WORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS. VICTIN SHOULD SEEK

AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING

STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INNEDIATE MEDICAL ATTENTION.

INGESTION - IF SWALLOWED, BO NOT INDUCE VONITING, SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

SECTION 6 - REACTIVITY DATA

STABILITY: STARLE CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OPEN FLAME. INCOMPATABILITY: (MATERIALS TO AVOID) HONE KNOWN HAZARDOUS DECOMPOSITION PRODUCTS: NAY PRODUCE HAZARDOUS FUNES WHEN HEATED TO DECOMPOSITION, FUNES MAY CONTAIN CARRON DIEXIDE AND/OR CARBON MONOXIDE. FLIMES MAY ALSO CONTAIN HYDROGEN CHLORIDE VAPOR AND TRACES OF PHOSGENE. 10 HAZARDOUS POLYMERZATION: WILL NOT DCCUR. 11 12 CONDITIONS TO AVOID: NA 14 SECTION 7 - SPILL OR LEAK PROCEDURES 15 STEPS TO BE TAKEN IN CASE NATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA, WIPE UP WITH INERT MATERIALS 18 AND PLACE IN APPROPRIATE CONTAINER. 20 WASTE DISPOSAL METHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH 21 LOCAL, STATE AND FEDERAL REGULATIONS, DO NOT PLACE AEROSOL CANS IN HOME 22 COMPACTOR. DO NOT PUNCTURE. 23 SECTION 8 - SPECIAL PROTECTION INFORMATION ... 24 25 26 RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY MIST. 27 A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE 28 TLV LIHITS. 29 VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT 31 INHALATION OF SOLVENT (MPORS. 32 33 PROTECTIVE GLOVES: OPTIONAL 34 EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES. 36 37 SECTION 9 - SPECIAL PRECAUTIONS 38 PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: DO NOT STORE ABOVE 120 DEG. F. 40 EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING. 41 OTHER PRECAUTIONS: USE ONLY AS DIRECTED, INTENTIAL MISUSE BY DILIBERATELY 43 CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARMFUL OR FATAL. 44 45 46 47 48 49 51 52 53 55 56:

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SYCA MORE FOR BATE OF PREP. B/12/86

FOR COATINGS, RESINS AND RELATED MATERIALS

GPRUCE GLOSS

PAINT

SECTION 1 ORANGE

Paral 86

7 TOLUENE 13.23 100.0 375.0 1.27 9 (108-88-3) PFL - SEE BOTTOM OF SECTION 2.	1			SECTION.					<del>-</del>	!
TRADE NAME: SPRUCE GLOSS DRAME  PRODUCT CLASS; ARROSCI — VINM. TOLLENE ALKYD ENAMEL.    NAMERACTURERS CODE IDENTIFICATION: 00-0078-0028				- ·	• 917 (	CROSBY AVE.	, SYCAP	IORE, IL. 60178	3 ਨੂੰ ਨੂੰ ਨੂੰ	1
RROBUT CLASS: ARREQUE	-	EMERGENCT TELEPHON	ar un: 012-01	101Y-7101						
NAMERICURES CODE IDENTIFICATION: 00-0098-0028   SECTION 2 - HAZARDOUS INGREDIENTS   SECTION 2 - APPORT PRESSUL		TRADE NAME: SPRUC	CE GLOSS ORANG	Æ					4 <u>1</u>	
SECTION 2 - HAZARDOUS INGREDIENTS   SOUTH										1
ACGIH TLV(TNA)/OSNA PEL	•	MANUFACTURERS CODE	IDENTIFICATI	ION: OO-	0098-0026	3			0.13	1
INGREDIENT - (CAS\$)   PERCENT   PPM   NG/N3   LEL   AEROSOL CAN   40 P.S.I.			SECTION 2 -	HAZARDO	us ingrei	PLENTS				i.s
INGREDIENT - (CAS\$)   PERCENT   PPM   NG/N3   LEL   AEROSOL CAN   40 P.S.I.				ΔC	ETH TI U/	7HA1/NGHA PI	<del></del>	LIAPOR POES	- D	i izili. O Die
TITAMIUM DIDXIDE 1.61 NO 15.0 ND 1.27  (13463-67-7) (AG DUST) ND ND ND 1.27  TOLLENE 13.23 100.0 375.0 1.27  ACETUNE 9.90 750.0 1,780.0 2.60  (67-64-1) 1,000 2,400  KINERAL SPRITS 140 ND		INGREDIENT - (CAS:	<b>\$</b> )							- L.L.
TITANTUM DIDXIDE									}_u	C !
TOLLINE  TOLLINE  TOLLINE  TOLLINE  TOLLINE  13.23 100.0 375.0 1.27  TOLLINE  (109-88-3)  PEL - SEE BOTTON OF SECTION 2.  ACETURE  9.99 750.0 1,780.0 2.60  TIMERAL SPIRITS  142 NB ND .70  (647-64-1)  (64742-66-7)  ND ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND ND  ND								9 70 DEG.		٠
TOLUENE 13.23 100.0 375.0 1.27  TOLUENE 13.23 100.0 375.0 1.27  (109-88-3) PEL - SEE BOTTOM OF SECTION 2.  (67-64-1) 1,000 2,400  (67-64-1) 1,000 2,400  (67-64-1) ND		TITANIUM DIOXIDE		1.61	MD_		ND		_ 팃물	ENTA
1108-89-3			S DUST)						ب 16	Ē
### ACETUNE									25	Z :
(67-64-1) RIBERAL SPIRITS , 42 NB ND ,70  (64742-66-7) ND ND ND ND  VARNISH MAKERS & PAINTER 5.81 300.0 1,330.0 1.10  NAPHTHA (8030-30-6) ND ND ND  XYLENE 2.86 100.0 435.0 1.00  (1330-20-7) NEXAME 18.06 50.0 180.0 1.20  (110-54-3) SO0 1,800  PROPANE - (74-98-6) 19.7 NB ND 2.30  1000.0 1800.0  ISOBUTANE - (75-28-5) 13.2 NB NB 1.90  8-HOUR TIME ACCEPTABLE ACCEPTABLE NAXIMUM PEAK ABOVE THE MEIGHTED CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FOR AB HOUR SHIFT CONCENTRATION HAXIMUM DURATION  TOLLIENE 200 PPM 300 PPM 300 PPM 10 HINDITIES.  SECTION 3 - PHYSICAL BATA  BOILING POINT! NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: SSX GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANHABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO			721						<b>一円里</b>	ile i
MINERAL SPIRITS				7.70		-	2.60		ü	24.0
NE   NE   NE   NE   NE   NE   NE   NE				.49	-	~	. 70			LL .
VARNISH MAKERS & PAINTER  NAPHTHA (8030-30-6)  XYLENE  2,86 180.0 435.0 1.00  (1330-20-7)  100 435  HEXANE  18,06 50.0 180.0 1,20  (110-54-3)  PROPANE - (74-98-6)  19,7 NB ND 2,30  1000.0 1800.0  ISDBUTANE - (75-28-5)  13,2 NB NB 1,90  8-HOUR TIME ACCEPTABLE ACCEPTABLE MAXIMUM PEAK ABOVE THE MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FOR AN 8-HOUR SHIFT CONCENTRATION MAXIMUM DURATION  TOLLENE  200 PPM 300 PPM 500 PPM 10 HINJTUTES.  BOILING POINT: NA UAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEB. F (T.O.C.) LEL: SEE SECTION 2  FLASHABILITY CLASSIFICATION: NA  BOIT: CONSUMER COMMODITY ORNO							1IV			
NAPHTHA (8030-30-6)  XYLENE  2.86 180.0 435.0 1.00  (1330-20-7)  HEXANE  18.06 50.0 180.0 1.20  (110-54-3)  FROPANE - (74-98-6)  19.7 NB ND 2.30  1000.0 1800.0  ISOBUTANE - (75-28-5)  13.2 NB NB 1.90  8-HOUR TIME ACCEPTABLE ACCEPTABLE HAXIMUM PEAK ABOVE THE MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FOR AN 8-HOUR SHIFT CONCENTRATION MAXIMUM DURATION  TOLLENE  200 PPM - 300 PPM S00 PPM 10 HINJIUTES.  SECTION 3 - PHYSICAL BATA  BOILING POINT: NA UAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER, PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANNABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO			PATNTER	5.81			1,10			
XYLENE				2101			-1124	•		
HEXANE  18.06 50.0 180.0 1.20  (110-54-3) 500 1.800  PROPANE - (74-98-6) 19.7 MB ND 2.30  1000.0 1800.0  ISUBUTANE - (75-28-5) 13.2 MB NB 1.90  8-HOUR TIME ACCEPTABLE ACCEPTABLE MAXIMUM PEAK ABOUE THE MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FOR AN 8-HOUR SHIFT CONCENTRATION MAXIMUM BURATION  TOLLIENE 200 PPM 300 PPM 500 PPM 10 MINUTUTES.  SECTION 3 - PHYSICAL BATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLASHABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO				2.86			1.00			
PROPANE - (74-98-6)  19.7 NB ND 2.30 1000.0 1800.0  ISOBUTANE - (75-29-5)  13.2 NB NB 1.90  8-HOUR TIME ACCEPTABLE ACCEPTABLE MAXIMUM PEAK ABOUE THE MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION MATERIAL AVERAGE CONCENTRATION FOR AN 8-HOUR SHIFT CONCENTRATION HAXIMUM BURATION  TOLLIENE 200 PPM 300 PPM 300 PPM 10 MINUTUTES.  SECTION 3 - PHYSICAL BATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (1.0.C.) LEL: SEE SECTION 2  FLANHABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO		(1330-20-7)	*		100	435				
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ISOBUTANE - (75-29-5)  13.2 NB NB 1.90  8-HOUR TIME ACCEPTABLE ACCEPTABLE HAXIMUM PEAK ABOVE THE MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FUR AN 8-HOUR SHIFT CONCENTRATION HAXIMUM BURATION TOLUENE 200 PPM - 300 PPM S00 PPM 10 HINUTUTES.  SECTION 3 - PHYSICAL BATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLASH POINT: CONSUMER COMMODITY ORNO		(110-54-3)			500	1,800				
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MEIGHTED CEILING ACCEPTANCE CEILING CONCENTRATION HATERIAL AVERAGE CONCENTRATION FOR AN 8-HOUR SHIFT CONCENTRATION HAXIMUM DURATION  TOLLIENE 200 PPM - 300 PPM 500 PPM 10 HINUTUTES.  SECTION 3 - PHYSICAL DATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: SSX GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANHABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO  EXTINGUISHING MEDIA: USE CARBON DIDXIDE, DRY CHEMICAL OR FOAN.			8-HOUR TINE	ACCEPTO	ARLE	ACCEPTABLE	MAXTH	M PEAK ABOVE 1	THE	
CONCENTRATION MAXIMUM DURATION  TOLLIENE 200 PPM 300 PPM 500 PPM 10 MINUTUTES.  SECTION 3 - PHYSICAL BATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85X GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANHABILITY CLASSIFICATION: NA  DOT: CONSUMER COMMODITY ORNO										
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SECTION 3 - PHYSICAL BATA  BOILING POINT: NA VAPOR DENSITY: HEAVIER THAN AIR  EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE MEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEB. F (T.O.C.) LEL: SEE SECTION 2  FLANNABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO						CONCENTRAT	TION H	MAXIMUM DURATIO	)N:	
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EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE WEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANNABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO										
EVAPORATION RATE: FASTER THAN ETHER. PERCENT VOLATILE WEIGHT PER BY VOLUME: 85% GALLON: NA  SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANNABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO										
SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANMABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO		BOILING POINT! N	Α		VAPOR D	ENSITY: HE	AVIER '	THAN AIR		
SECTION 4 - FIRE AND EXPLOSION DATA  FLASH POINT: ACROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2  FLANNABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO			• •					•		
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FLASH POINT: AEROSOL-10 DEG. F (T.O.C.) LEL: SEE SECTION 2 FLANNABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORNO			CENTION A		D ENEW AC	7/MI PATA		<del></del>		
FLAMMABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORMO			BCU11UN 4	- LTICE WH	U EXPLUS	JURI URIA				
FLANMABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORMO										
FLAMMABILITY CLASSIFICATION: NA DOT: CONSUMER COMMODITY ORMO		FLASH POINT: AFR	OSOL-10 DEG. I	F (T.O.C.	) LFI	LI SEE SECT	ION 2			
DOT: CONSUMER COMMODITY ORNO					<u> </u>	<del></del>				
EXTINGUISHING MEDIA: USE CARBON DIDXIDE, DRY CHEMICAL OR FOAM.										
•		EXTINGUISHING MED	IA: USE CARBO	ON DIOXID	E, DRY C	HEMICAL OR	FOAM.			
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			·			<del>-,</del>				

CHARGE GLOSS URRUGE PARTING OF AEROSOL P.243 UNUSUAL FIRE AND EXPOSION HAZARUS: CAN.

USED TO COOL CONTAINERS	ICEDURES: HATER SPRAY HAY BE INEFFECTIVE. HATER HAY BE I TO PREVENT BURSTUNG. IF HATER IS USED, FOR MIZZUES AND ES AND SELF CONTAINED BREATHING APPARATUS.	
PREFERENCE: WORK GOOGLE	LO RED SELL CONTRIBUTION STEERINGS STEERINGS	
SECT I	ION 5 - HEALTH HAZARD	
THRESHOLD LINIT VALUE: 8	SEE SECTION 2	•
TITANIUM DIOXIDE		
(13463-67-7) (AS DUST)		
OVEREXPOSURE - NO	INE KNOWN	
	ATION TESTS IN RATS: DUST FROM DRIED PRODUCTS PRODUCED AN	
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	DUST RESPONSE IN THE LUNGS.	
TOLUENE		
(10 <del>0-80-</del> 3)		
ACUTE OVEREDPOSUR		
	LEAD TO CENTRAL NERVOUS SYSTEM	
	CING SUCH EFFECTS AS HEADACHE, DIZZINESS, NAUSEA, AND LOSS	
OF CONSCIOUSNESS.		
	ORT-TERM LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE	•
	INGED AND REPEATED CONTACT MAY BE HORE IRRITATING.	
	ROLUNGED AND REPEATED LIQUID CONTACT CAN CAUGE DEFATTING	
	E SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.  H CONCENTRATIONS OR PROLONGED TO LOWER CONCENTRATIONS MAY	
	TATING TO MUCOUS MEMBRANES.	
	ID INGESTION MAY RESULT IN VONITING; ASPIRATION	
	DHITUS INTO THE LUNGS HUST BE AVOIDED AS EVEN SHALL	
	E LUNES HAY RESULT IN CHEMICAL PHEUMONITIS AND PULMONARY	
EIEWAJEKIRKWE.		
	SURE - RESPIRATORY TRACT IRRITATION.	
	SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.	
LIVER AND KIDNEY		
	E MAY RESULT FROM LONG TERM INHALATION OF TOLLIENE VAPOR.	
aninal studies h	NVE SHOWN THAT INHALATION OF HIGH LEVILS OF TOLLUENE PRODUCED	
	ATION. SUCH SENSITIZATION HAY CAUSE FATAL CHANGES IN HEART	
	BSED TO 1400 PPN OR 1200 PPN OF TOLUENE FOR 14 HOURS PER	
DAY FOR 4 TO 5 WE	EEKS (RESPECTIVELY) EXHIBITED HIGH FREQUENCY HEARING	
DEFECTS. THERE IS	S NO EVIDENCE THAT INDUSTRIALLY ACCEPTED LEVELS OF TOLUENE	
	TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS.	
	FIRST AID:	
EYE CONTACT - FLL	USH WITH WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN.	
GET MEDICAL ATTEN	NTION.	
SKIN CONTACT - FL	LUSH WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND	· · · · · · · · · · · · · · · · · · ·
	Washing with soap and water. Do not reuse clothing or	
	NED. IF IRRITATION PERSISTS, BET MEDICAL ATTENTION.	
DHIALATION - RED	NOVE VICTIM TO FRESH AIR AND PROVIDE DAYGEN IF BREATHING	
IS DIFFICULT. GIV	VE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL	
ATTENTION.		
INGESTION - DO NO	OT INDUCE VOMITING, IF VONITING OCCURS SPONTANEOUSLY, KEEP	



HEAD BELOW HIPS TO PREVENIT ASPIRATION OF LIQUID INTO THE LUNGS. GET

RRITATION, REDNESS, TEARING, BLURRED
ED CONTACT CAN CAUSE MODERATE IRRITATION,
IN OF VAPORS CAN CAUSE NASAL, AND RESPIRA-
OVESS, FATIQUE, NAUSEA, HEADACHE, POSSIBLE
CIATION.
TINAL IRRITATION, NAUSEA, VOMITING,
N
2.2
FIRST AID:
VRGE AMOUNTS OF WATER, LIFTING UPPER AND
DICAL ATTENTION.
OPOSED AREA WITH SOAP AND WATER, REMOVE
CONTAMINATED CLOTHING BEFORE RE-USE.
INDIVIDUAL TO FRESH AIR. IF BREATHING IS
F DESATHING HAS STUPPED BIVE ARTIFICAL
GUITE AND SET MEDICAL ATTENTION.
E VONITING IF LARGE ANOUNTS ARE INGESTED.
E VOHITING INNEDIATELY BY STICKING FINGER
EVER GIVE ANYTHING BY HOUTH TO AN
$(x_{ij})^{-1}(\theta_{ij}) = (x_{ij})^{-1}(\theta_{ij}) = (x_{$
•
CENTRAL NERVOUS SYSTEM DEPRESSION PRODUC-
TZINESS, NAUSEA, AND LOSS OF CONSCIOUSNESS
OR WAPOR CONTACT MAY RESULT IN SLIGHT EYE
TED CONTACT HAY BE MORE IRRITATING.
TED CONTACT MAY BE MORE IRRITATING. PEAYED LIGHID CONTACT CAN CAUSE DEFATTING
TED CONTACT MAY BE MORE IRRITATING. PEATED LIQUID CONTACT CAN CAUSE DEFATTING Y RESULT IN SKIN IRRITATION AND DERMATITIS.
TED CONTACT MAY BE MORE IRRITATING.  PEATED LIQUID CONTACT CAN CAUSE DEFATTING  Y RESULT IN SKIN IRRITATION AND DERMATITIS.  G OR PROLONGED EXPOSURE TO LOWER CONCENTRA.
TED CONTACT MAY BE MORE IRRITATING.  PEATED LIQUID CONTACT CAN CAUSE DEFATTING  Y RESULT IN SKIN IRRITATION AND DERMATITIS.  G OR PROLONGED EXPOSURE TO LOWER CONCENTRA.  G TO MUCOUS MEMBRANES.
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FED CONTACT MAY BE MORE IRRITATING.  PEATED LIQUID CONTACT CAN CAUSE DEFATTING  Y RESULT IN SKIN IRRITATION AND DERMATITIS.  G OR PROLONGED EXPOSURE TO LOWER CONCENTRA.  G TO MUCCUS MEMBRANES.  Y RESULT IN VONITING; ASPIRATION (BREATHING ELIQUID CONTACT WITH THE LUNGS CAN RESULT
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FED CONTACT MAY BE MORE IRRITATING.  PEATED LIQUID CONTACT CAN CAUSE DEFATTING  Y RESULT IN SKIN IRRITATION AND DERMATITIS.  G OR PROLONGED EXPOSURE TO LOWER CONCENTRA  G TO MUCOUS MEMBRANES.  Y RESULT IN VONITING; ASPIRATION (BREATHING  S LIQUID CONTACT WITH THE LUNGS CAN RESULT  HOMARY EDEMA/HEMORRHAGE.
FEATER LIQUID CONTACT CAN CAUSE DEFATTING. PEATER LIQUID CONTACT CAN CAUSE DEFATTING PEATER LIQUID CONTACT CAN CAUSE DEFATTING PEATER LIQUID CONTACT EXPOSURE TO LOWER CONCENTRA TO MUCOUS MEMBRANES. PERSULT IN VONITING; ASPIRATION (BREATHING LIQUID CONTACT WITH THE LUNGS CAN RESULT MONARY EDEMA/HEMORRHAGE.  FIRST AID:
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FEATED LIQUID CONTACT CAN CAUSE DEFATTING  RESULT IN SKIN IRRITATION AND DERMATITIS.  OR PROLONGED EXPOSURE TO LOWER CONCENTRA.  TO HUCCUS HENDRANES.  Y RESULT IN VONITING; ASPIRATION (BREATHING LIQUID CONTACT WITH THE LUNGS CAN RESULT MONARY EDEMA/HENORGHAGE.  FIRST AID:  IF PERSISTENT IRRITATION OCCURS, GET
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PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PEATED LIQUID CONTACT CAN CAUSE DEFATTING PEATED LIQUID CONTACT CAN CAUSE DEFATTING PEATED LIQUID CONTACT REPOSURE TO LOWER CONCENTRATED HUCOUS HENDRANES. PERSULT IN VONITING; ASPIRATION (BREATHING LIQUID CONTACT WITH THE LUNGS CAN RESULT HOWARY EDEMA/HENDROMAGE.  FIRST AID: IF PERSISTENT IRRITATION OCCURS, GET  NO WATER. REMOVE CONTAMINATED CLOTHING AND
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PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PEASULT IN SKIN IRRITATION AND DERHATITIS. FOR PROLONGED EXPOSURE TO LOWER CONCENTRA. PEASULT IN VONITING; ASPIRATION (BREATHING ELIQUID CONTACT WITH THE LUNGS CAN RESULT HOWARY EDEMA/HENORRHAGE.  FIRST AID: IF PERSISTENT IRRITATION OCCURS, GET  HO MATER. REMOVE CONTANINATED CLOTHING AND F PERSISTENT IRRITATION OCCURS, GET MEDICAL READ PROVIDE OXYGEN IF BREATHING IS IRATION IF NOT BREATHING, GET MEDICAL
PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PERSULT IN SKIN IRRITATION AND DERNATITIS. PERSULT IN SKIN IRRITATION (BREATHING BOTTOM CONCENTRAL CONCENTRAL CONCENTRAL CONCENTRAL CONCENTRAL CONCENTRAL CONTACT WITH THE LUMBS CAN RESULT CONCENTRAL CONTACT WITH THE LUMBS CAN RESULT CONCENTRAL CONTACT CONTACT CONCENTRAL CONTACT CON
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PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PERSULT IN SKIN IRRITATION AND DERNATITIS. PERSULT IN SKIN IRRITATION (BREATHING IN IT
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PEATED LIQUID CONTACT CAN CAUSE DEFATTING. PERSULT IN SKIN IRRITATION AND DERNATITIS. PERSULT IN SKIN IRRITATION (BREATHING IN THE LUNGS CONCENTRALIS). PERSULT IN VONITING; ASPIRATION (BREATHING IN LIQUID CONTACT WITH THE LUNGS CAN RESULT CONTACT WITH THE LUNGS CAN RESULT CONTACT AND PERSURT IRRITATION OCCURS, GET PERSUSTENT IRRITATION OCCURS, GET MEDICAL PERSU

aciste guerexposlike -- central nevergus system system depression in high CONCENTRATIONS.

EYE CONTACT - MAY BE AN EYE IRRITANT.

SKIN CONTACT - PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

#### FIRST AID:

EYE CONTACT - FLUSH EYES WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT - WASH AFFECTED AREA WITH SOAP AND LARGE QUANITIES OF WATER.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

INHALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR WHEN MORKING IN AREAS WITH HIGH VAPOR CONCENTRATIONS. VICTIH SHOULD SEEK AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES, ADMINISTER DOYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK IMMEDIATE MEDICAL ATTENTION. INGESTION - IF SHALLOWED, DO NOT INDUCE VONITING. SEEK IMMEDIATE MEDICAL ADVICE AND/OR ATTENTION.

#### **XYLENE**

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ACUTE OVEREXPOSURE -

EYE CONTACT - MAY BE AN EYE IRRITANT.

Skin Centact - May cause skin irritation upon prolonged or repeated CONTACT.

INHALATION - IRRITANT TO UPPER RESPIRATORY SYSTEM. CAN CAUSE HEADACHE,

NAUSEA, AND DIZZINESS.

INGESTION - MAY BE HARNFUL IF SHALLOHED.

CHRONIC OVEREXPOSURE -

POSSIBLE LIVER AND KIDNEY DANAGE.

#### FIRST AIB:

EYE CONTACT - FLUSH EYES WITH LARGE QUAINTIES OF WATER FOR AT LEAST 15 -HINUTES AND SEEK INNEDIATE HEDICAL ATTENTION.

SKIN CONTACT - WASH SKIN WITH SOAP AND LARGE DUANITIES OF WATER AND SEEK

HERICAL ATTENTION IF IRRITATION FROM CONTACT PERSISTS.

INNALATION - IF BREATHING DIFFICULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR when working in areas with high vapor concentrations. Victin should seek AIR FREE OF VAPORS. IF VICTIM EXPERIENCES CONTINUED BREATHING DIFFICULTIES. ADMINISTER OXYGEN UNTIL MEDICAL ASSISTANCE CAN BE RENDERED. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION AND SEEK INNEDIATE MEDICAL ATTENTION. INDESTION - IF SHALLOWED, DO NOT INDUCE VONITING, SEEK IMMEDIATE MEDICAL

ADVICE AND/OR ATTENTION.

#### HEXANE

(110-54-3)

#### ACUTE OVEREXPOSURE -

EYES - CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION. SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION,

DEFATTING, DERMATITIS.

INHALATION - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, BIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS, AND EVEN ASPHYXIATION.

INDESTION - CAN CAUSE GASTROINTESTINAL IRRATION, NAUSEA, VONITING, AND DIARRHEA. ASPIRATION OF NATERIAL INTO THE LUNGS CAN CAUSE CHENICAL

PHELMONITIE WHICH CAN BE FATAL. CHRONIC OVEREXFOSURE -

INFORMATION SUGGESTS THAT HEXAME HAS THE POTENTIAL OF

Causing serious nerve impairment and possible even nerve damage known as

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PERIPHERAL NEUROPATHY ON PROLONGED OR REPEATED OVEREXPOSURE.

#### FIRST AID;

EYE CONTACT - FLUSH EYES WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIBS OCCASIONALLY, GET MEDICAL ATTENTION. SKIN CONTACT - THROUGHLY WASH EXPOSED AREA WITH SDAP AND WATER, REHOVE CONTAKINATED CLOTHING, LAUNDER CONTAKINATED CLOTHING BEFORE RE-USE. INHALATION - IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR, IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN, IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION, KEEP PERSON WARH, QUIET AND GET MEDICAL ATTENTION. INGESTION - IF SMALLOWED, DO NOT INDUCE VONITING, KEEP PERSON WARN, QUIET, AND SET MEDICAL ATTENTION, ASPIRATION OF MATERIAL INTO LUNGS DUE TO VONITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL,

#### SECTION 6 - REACTIVITY DATA

STABILITY: STARLE CONDITIONS TO AVOID: DO NOT STORE ABOVE 120 DEG. F. KEEP FROM SPARKS, PILOT LIGHTS OR OPEN FLAME.

INCOMPATABILITY: (MATERIALS TO AUDID) NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE HAZARDOUS FUNES WHEN HEATED TO DECOMPOSITION. FUMES MAY CONTAIN CARBON DIGICIDE AND/OR CARBON MONOXIDE.

HAZARDOUS POLYMERZATION: WILL NOT OCCUR.

24 CONDITIONS TO AVOID; NA

## SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE NATERIAL IS RELEASED OR SPILLED: REMOVE ALL SOURCES OF IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA, WIPE UP WITH INERT MATERIALS AND PLACE IN APPROPRIATE CONTAINER,

WASTE DISPOSAL METHODS: DO NOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT PLACE MEROSOL CANS IN HOME COMPACTOR. DO NOT PUNCTURE.

#### SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: AVOID CONTINUOUS BREATHING OF VAPORS AND SPRAY MIST. A SELF CONTAINED BREATHING APPARATUS REQUIRED FOR CONCENTRATIONS ABOVE TLV LIKITS.

VENTILATION: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT INHALATION OF BOLVENT VAPORS.

PROTECTIVE GLOVES: OPTIONAL

EYE PROTECTION: ONLY UNDER CONDITIONS WHERE SPRAY HIST HIGHT GET INTO EYES.

#### SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING! DO NOT STORE ABOVE 120 DEG. F. EXPOSURE TO HEAT OR PROLONG EXPOSURE TO SUN MAY CAUSE BURSTING.

OTHER PRECAUTIONS: USE ONLY AS DIRECTED. INTENTIAL HISUSE BY DILIBERATELY CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARMFUL OR FATAL.

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL CAFFTY DATA CULLY

Ex.01 = 0 to Ex.TAL | LLL
to FET ( ) LLL
to FE

Papa 418

Required under US Shipbuilding,

	(
OFO LIGHT	
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Peck's Products Company	(314) 385-5454
ADDRESS (Number, Street, City, State, and ZIP Code) 610 East Clarence Street St. Louis, MO	63147
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS Pepco 418
CHEMICAL FAMILY Soap	Mixture of Powders

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS	0		BASE METAL		ļ
CATALYST	0		ALLOYS	0_	
VEHICLE	0		METALLIC COATINGS	l.a.	
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	0		OTHERS		
OTHERS	0				
HAZARDOUS MIXTURI	ES OF	OTHER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
None					

SECTION III - PHYSICAL DATA					
BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H2O=1)	N A		
VAPOR PRESSURE (mm Hg.)	NA	PERCENT, VOLATILE BY VOLUME (%)	0		
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (=1)	С		
SOLUBILITY IN WATER	50%	pH (2.5% Solution)	9.7		
APPEARANCE AND ODOR	Lt. B	rown powder, lavalaria odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA						
FLASH POINT (Method used) N.A.	FLAMMABLE LIMITS	Lei	Uel			
EXTINGUISHING MEDIA	4.8		<u> </u>			
SPECIAL FIRE FIGHTING PROCEDURES						
None						
UNUSUAL FIRE AND EXPLOSION HAZARDS						
None	•					

PAGE (1)

(Continued on reverse side)

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		SECTION	V - HEA	ALTH HAZARD DATA
THRESHOLD LIMIT NOT ESTABL EFFECTS OF OVER				
		eve or no	w irri	tation in poorly ventilated areas
	<del></del>	7	<del></del>	, , , , , , , , , , , , , , , , , , , ,
EMERGENCY AND Flush w			ritati	on persists get medical attention.
		SECTIO	N VI - F	REACTIVITY DATA
STABILITY	UNSTABLE		CONDITIO	DIOVA CT 2N
	STABLE	x		
INCOMPATABILITY	Materials to		<del></del>	
None HAZARDOUS DECC	OMPOSITION	PRODUCTS	<del></del>	
None			<del> </del>	CONDITIONS TO AVOID
HAZARDOUS POLYMERIZATION	<b>I</b>	OCCUR		NONE
POETMERIZATION		NOT OCCUR	х	
		<b>SECTION VII</b>	- SPILL	OR LEAK PROCEDURES
STEPS TO BE TAKE	EN IN CASE N	MATERIAL IS REL	EASED OR	SPILLED
No speci	101 000	autions		
NO Spec.	IAI PIE	autions		
WASTE DISPOSAL	METHOD			_
Flush w	ith wate			
riosii w.	TEN WALE	<u> </u>	<del></del>	
	SEC	TION VIII - S	PECIAL	PROTECTION INFORMATION
RESPIRATORY PRO	STECTION IS	pecify type)	D005:::	
VENTILATION	LOCAL EX	HAUST	POURLY	VENT!LATED AREAS
VERVICATION	NON	EAL (General)		NONE
	NO			OTHER NONE
Not neces				EVE PROTECTION Not necessary
OTHER PROTECTIV		VT		NOT HELEBRALY
NONE				
		SECTION	IX - SPI	ECIAL PRECAUTIONS
PRECAUTIONS TO	BE TAKEN I	HANDLING AND	STORING	
1,12,10010	, RENGI	- GILDREN		
OTHER PRECAUTION	ONS	•		

PAGE (2)

Form OSHA-20 Rev. May 72

# REFRACTORIES & MINERALS CORPORATION

# Permanente 165 MATERIAL SAFETY

# DATA SHEET

Company / Plant	Issue Date	Identification Number
National Refractories & Minerals Corp. One Kaiser Plaza, Suite 650 Oakland, <u>California 94</u> 612	Revised August 6, 1985	N <b>A</b>
Trade Name (Common Name or Synonym) Permanente 165 AF	Emergency Phone Number (415) 462–11	47
Chemical Na	Formula NA	DOT identification Number NA

erial or Component		
	•	
In the amounts pre	esent, no substance has known toxi	city greater
than listed for nu	isance dusts. (See Section V).	, 0
	_	
1984-85 ACGIH TLV's	: 5 mg/m <sup>3</sup> respirable dust, 10 mg	/m <sup>3</sup> total dust.
OSHA 1910.1000 PEL's	$s:5 \text{ mg/m}^3 \text{ respirable dust, } 15 \text{ mg}$	/m <sup>3</sup> total dust.
	,	,, = 1,000

# II. PHYSICAL DATA

Material is (At Normal Conditions):  Liquid Solid (	Gas 👿 Other	Granul	ar, dry	Appearance and Size: Color:	-4 mesh Grey	Odor:	None
Acidity/Alkalinity  pH = NA	Melting Point Boiling Point	NT A	F Specific Gravi F Solubility in wa		2.7-3.1 ight) <5		Vapor Pressure (mm Hg at 20°C) NA

# III. PERSONAL PROTECTIVE EQUIPMENT

Pospirator Protection Respirator for particulates approved by NIOSH/MSHA and adequate for contaminant concentrations encountered.	Hands, Arms, and Body Gloves are recommended
Eyes and Face	Other Clothing and Equipment
Safety glasses are recommended.	NA NA

# IV. EMERGENCY MEDICAL PROCEDURES

<ol> <li>Skin: Wash with soap and water.</li> <li>Eyes: Irrigate immediately with plenty of water. medical attention if necessary.</li> </ol>	Obtain
---------------------------------------------------------------------------------------------------------------------------------------------------	--------

# V. HEALTH/SAFETY INFORMATION

	Inhalation Ingestion	Nuisance dusts have little adverse effect on lungs and do not produce significant disease or toxic effect when exposures are kept under the TLV or PEL.								
Health	Skin	May cause	skin irritatio	tion on prolonged or repeated contact.						
H	Eyes	May irritate or injure eyes.								
	Threshold Limit	Value S∈	e Section I					ę ·		
Fire and Explosion	Flash Point	NA	Auto Ignition Temperature	۰F	Flammable Lower Upper	Limits in NA NA	% %	Extinguishing Media		
Fire Expl	Unusual Fire a	nd Explosion Hazards					Extinguishing Media Not to be Used			
		NA						NA		
/ity	Stability  Stable Unstable		Incompatibility (Materials to Avoid) NA.					·		
Reactivity	Conditions to A	void	NA.					·		
Re	Hazardous Dec	composition Products	NA							

# VI. ENVIRONMENTAL

#### Spill or leak procedures

We recommend that the purchaser establish a spill prevention, control and counter measure plan. This plan should include procedures for proper storage as well as clean-up of spills or leaks. The procedures should conform to safe practices and provide for proper recovery or disposal. Depending on the quantity spilled, notification of the National Response Center (800-424-8802) may be required in case of hazardous substances. (See EPA and DOT regulations; also various state and local regulations.)

Waste Disposal Method\*

Used or unused product should be tested to determine hazard status and disposal requirements under federal, State or local laws and regulations.

\*Disposer must comply with Federal. State and Local disposal or discharge laws.

# VII. ADDITIONAL INFORMATION

- 1. Do not breathe dust.
- Toxic risk may be altered by chemical or physical changes caused by conditions of use.
- 3. Permanente 165 AF is a refractory ram-cast-gun mix.

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product,

USAKU CUPPER F MSDS NUMBER	PRODUCTS COMPANY - CCPC-00-0198
	ROVALE
EMM! PINNERTAL	[PRISE/

810 LINCOLN AVE. PO. BOX 598 WEST CHESTER PA 19381-0598 (215) 696-6770 FAX: (215) 430-8431 TELEX: 880993

1991 Notice

The chemicals listed below are present in Phosphor Copper and are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 on 40 CFR, Part 372. This notice must be attached to the current Material Safety Data Sheet for Phosphor Copper which has been supplied to you by Metallurgical Products Company and may not be removed for any reason.

15% PHOSPHOR COPPER <u>Chemical</u> Phosphor  Copper	<u>CAS Number</u> 7723-14-0 7440-50-8	% by Weight 15 85
13.5% PHOSPHOR COPPER <u>Chemical</u> Phosphor  Copper	<u>CAS Number</u> 7723-14-0 7440-50-8	% by Weight 13.5 86.5
10% PHOSPHOR COPPER <u>Chemical</u> Phosphor  Copper	<u>CAS Number</u> 7723-14-0 7440-50-8	% by Weight 10 90
8% PHOSPHOR COPPER <u>Chemical</u> Phosphor	<u>CAS Number</u> 7723-14-0	% by Weight
Copper	<i>7</i> 440-50-8	92

## PHOSPHOR COPPER

Phosphorus (P)

C.A.S. No. 7723-14-0

OSHA PEL: 0.1 mg/M<sup>3</sup>

Copper (Cu)

C.A.S. No. 7440-50-8

OSHA PEL: 1 mg/M³ (mist and dust)

 $0.1 \text{ mg/M}^3$  (fume)

#### PHYSICAL DATA

Appearance: Shot form - Silver grey in color.

Waffle form - Dull grey in color

Melting Point:

1015° C 15% P Cu 900° C 13.5% P Cu

840° C 10% P Cu 700° C 8% P Cu

#### PHYSIOLOGICAL EFFECTS

Inhalation of phosphorus vapors has caused respiratory tract irritation. Chronic intoxication includes gastrointestinal distress and garlic breath. A classical effect of chronic phosphorus intoxication is necrosis of the jaw.

Industrial exposure to copper fumes, dusts, or mists result in metal fume fever with atrophic changes in nasal mucous membranes. Chronic poisoning results in Wilsons disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea.

#### REACTIVITY DATA

Copper reacts violently with acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine, ClF<sub>3</sub>, ethylene oxide, fluoride, hydrogen peroxide, hydrazic acid, hydrogen sulfide, Pb (N<sub>3</sub>)<sub>2</sub>, K<sub>2</sub>O<sub>2</sub>, NaN<sub>3</sub>, and Na<sub>2</sub>O<sub>2</sub>.

Copper is incompatible with 1-bromo-2-propyne.

Copper fume is incompatible with acetylene gas.

Copper dust and mist are incompatible with acetylene gas and magnesium metal.

Phosphorus is incompatible with potassium chlorate, potassium permanganate, peroxides, and oxidizing materials. It can react with reducing materials. When heated, phosphorus emits highly toxic fumes of  $PO_x$ .

KILOSPIN WOODS

MSDS Reference:

Date Prepared:

11/25/85

MATERIAL SAFETY DATA

Rev. 6/30/86

U.S.

0000.1 00.1691 | CCPC-00-0198

MANUFACTURER'S NAME

H. Kramer & Co.

EMERGENCY TELEPHONE NO.

(312) 226-6600

ADDRESS (Number, Street, City, State, and ZIP Code)
1339 W. 21st Street - Chicago, IL

CHEMICAL NAME AND SYNDNYMS

60608

TRADE NAME AND SYNONYMS

Phosphor Copper

Copper Base Alloy

FORMULA

ASTM B644 Alloy 3A

**SECTION II - HAZARDOUS INGREDIENTS** 

ELEMENT

PERCENTAGE

TLV ACGIH 8-HR TWA MG/M3

Copper and Phosphor

99.75 Min.

Phosphor

14.00 Min.

.1 5 Fume

Iron

.15 Max

\*\* This material is inert and non-toxic in the solid state \*\*

SECTION III - PHYSICAL DATA BOILING POINT (FO)

SPECIFIC GRAVITY (H,0=1)

4703° Copper

546

MOLTEN STATE OPERATING TEMPERATURE IS F. IN THIS RANGE ONLY

1830° Phosphorus BOILS OFF CARRYING WITH IT SMALL AMOUNTS OF OTHER METALS AS

5430 Iron

Phosphor

OXIDES.

APPEARANCE & ODOR:

ODORLESS: Grey Silver Metal

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)

N/A

FLAMMABLE LIMITS (ZV)

TO

EXTINGUISHING MEDIA

Dry chemicals or sand should be used with molten metals.

SPECIAL FIRE FIGHTING PROCEDURES.
Fire Fighters should wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Do not use water on molten metals.

FFECTS OF OVERE	VALUE	<del></del>	Con Contine II		
PROCESS OF DVIET	XPOSURE	<del> </del>	See Section II		
		····	See Attachment Items 8, 14, 9	-	
MERGENCY AND F	TIRST AID PROCEDU	JAES	See Attachment Items 3, 14, 9		
	MATE	RIAL IS	NOT A KNOWN CARCINOGEN		
Fumes a	and/or nuisano	e dust	will aggravate existing respiratory problems-		
		SECTIO	DN VI - REACTIVITY DATA		
TABILITY	UNSTABLE		CONDITIONS TO AVOID		
	STABLE	x	N/A		
NCOMPATABILITY	(Maserials to avoid)				
AZARDOUS DECO	MPOSITION PRODU	CTS	<b>%/</b> Ά		
HAZARDOUS	MAY OCCU	IR.	CONDITIONS TO AVOID		
POLYMERIZATION	WILL NOT	OCCUR.	X N/A		
	141661101		A N/A		
handling mo	lten metal.	Accumul	Special care should be taken water should be taken water should be vacuumed or wet-swept		
handling mo	lten metal.	Accumul	lations of dust should be vacuumed or wet-swept		
			·	EO	
	borne exposur	es.		to	
prevent air	METHOD	<del></del>	nings, chips, risers, grindings, etc. are recycl		
WASTE DISPOSAL	METHOD Met	al turn	nings, chips, risers, grindings, etc. are recycl		
WASTE DISPOSAL	METHOD Met	al turn			
WASTE DISPOSAL	METHOD Met dust collecte	al turn d in ex	khaust systems is sold.		
Zinc oxide	METHOD Met dust collecte SECTION	al turn d in ex	special protection information		
Zinc oxide	METHOD Met dust collecte SECTION	al turn d in ex	special protection information		
Zinc oxide	METHOD Met dust collecte SECTION	al turn d in ex IVIII -	khaust systems is sold.		
Zinc oxide	METHOD Met dust collecte SECTION OTECTION (Specify	al turn d in ex I VIII -	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)		
Zinc oxide ( Zinc oxide ( AESPIRATORY PRI VENTILATION PROTECTIVE GLO	METHOD Met dust collecte  SECTION OTECTION (Specify LOCAL EXHAUS MECHANICAL (C	al turn d in ex I VIII -	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)  SPECIAL  OTHER		
Zinc oxide of the control of the con	METHOD Met dust collecte  SECTION  OTECTION (Specify  LOCAL EXHAUS  MECHANICAL (O	al turn d in ex  IVIII -  IYPE) NIO  X  General)	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)  SPECIAL  OTHER  EYE PROTECTION Safety Glasses/Goggles/Shields	Led	
Zinc oxide of the control of the con	METHOD Met dust collecte  SECTION  OTECTION (Specify  LOCAL EXHAUS  MECHANICAL (O	al turn d in ex  IVIII -  IYPE) NIO  X  General)	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)  SPECIAL  OTHER	Led	
Zinc oxide of the control of the con	METHOD Met dust collecte  SECTION  OTECTION (Specify  LOCAL EXHAUS  MECHANICAL (Color of the color of the col	al turn d in ex  IVIII -  IYPE) NIO  X  Enersi)	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)  SPECIAL  OTHER  EYE PROTECTION Safety Glasses/Goggles/Shields	Led	
Zinc oxide  Zinc oxide  RESPIRATORY PRI  VENTILATION  PROTECTIVE GLO  Industrial  OTHER PROTECTI  Compliance	METHOD Met dust collecte  SECTION  OTECTION (Specify  LOCAL EXHAUS  MECHANICAL (Color of the color of the col	al turn d in ex  VIII -  Type) NIO  X  General)  ulation	SPECIAL PROTECTION INFORMATION  OSH Certified (3M 9920, etc.)  SPECIAL  OTHER  EYE PROTECTION Safety Glasses/Goggles/Shields as and other accepted safety and hygiene practic  NIX - SPECIAL PRECAUTIONS	Led	

- 1. ALUMINUM ... EFFECTS OF EXPOSURE: FUMES ARE A LOW HEALTH RISK BY INHALATION. DEFI AS A NUISANCE BY (ACGIH) EMERGENCY & FIRST AID TREATMENT: NO MEDICAL TREATMENT NECESSARY.
- 2. ANTIMONY ... EFFECTS OF EXPOSURE: MAY CAUSE IRRITATION TO SKIN/CONTACT DERMATITIS.

  INHALATION CAN CAUSE INFLAMMATION OF THE UPPER & COWER RESPIRATORY

  TRACTS. CHRONIC POISONING SYMPTOMS ARE DRYNESS OF THROAT, NAUSEA,

  HEADACHES, SLEEPLESSNESS, LOSS OF APPETITE AND DIZINESS. IN ACUTE

  SEVERE POISONING THERE MAY BE DEATH FROM CIRCULATORY OR RESPIRATORY

  FAILURE OR TOXIC HEPATITIS.

  EMERGENCY & FIRST AID TREATMENT, REMOVE FROM EXPOSURE AND HAVE BIOLOG

  CAL MONITORING UNDER DIRECTION OF A PHYSICAN.
- 3. BERYLLIUM ... EFFECTS OF EXPOSURE: ENTERS THE BODY ALMOST ENTIRELY BY INHALATION AI CAN CAUSE SYSTEMIC DISEASE OF LONG DURATION. SYMPTOMS ARE WEAKNESS, EASY FATIGUE AND WEIGHT LOSS.

  EMERGENCY & FIRST AID TREATMENT: REMOVE FROM EXPOSURE. ON OVEREXPOSURE DBTAIN PROMPT MEDICAL CARE BY A PHYSICAN.
- 4. CADMIMUM.... EFFECTS OF EXPOSURE: INHALATION MAY LEAD TO CHEMICAL PNEUMONITIS AND SEVERE CASES PULMONARY EDEMA. SYMPTOMS ARE INFLUENZA-LIKE SIMILAR METAL-FUME FEVER & GENERALLY OCCUR WITHIN A 8 HOUR PERIOD. IN SEVERE CASES DEATH CAN OCCUR AFTER 4 TO 7 DAYS. IT SHOULD BE STRESSED THAT CADMIUM INDUCED KIDNEY DAMAGE IS IRREVERSIBLE.

  EMERGENCY & FIRST AID TREATMENT: REMOVE FROM EXPOSURE AND GIVE OXYGEN THERAPY IF NECESSARY. OBTAIN PROMPT MEDICAL CARE.
- 5. CARBON ..... EFFECTS OF EXPOSURE: LOW HEALTH RISK BY INHALATION.

  EMERGENCY & FIRST AID TREATMENT: NO MEDICAL TREATMENT NECESSARY IN ITS

  PURE FORM.
- 6. CHROMIUM ... EFFECTS OF EXBOSURE: CAN CAUSE SKIN AND MUCDUS MEMBRANE IRRITATION,
  DERMATITIS AND CHROME ULCERATION.

  EMERGENCY & FIRST AID TREATMENT: WASH SKIN THOROUGHLY AFTER CONTACT.

  OBTAIN MEDICAL CARE FOR CHROME ULCERATION.
- 7. COBALT ..... EFFECTS & EXPOSURE: INHALATION OF FUME WILL PRODUCE SYSTEMIC POISONING WITH MYDCARDIAL DISORDERS AND IRRITANT EFFECTS ON THE AIRWAYS, EYES AND DIGESTIVE TRACT. SYMPTOMS RANGE FROM SHORTNESS OF BREATH TO COUGHING.

  EMERGENCY & FIRST AID TREATMENT: No ANTIDOTE EXISTS. MONITORING BY A PHYSICAN WITH PARTICULAR ATTENTION TO THE CARDIOVASCULAR SYSTEM ADVISABLE.
- 8. COPPER ..... EFFECTS & EXPOSURE: FUMES CAN CAUSE NAUSEA, GASTRIC PAIN, DIARRHEA AN IRRITATION TO THE UPPER RESPIRATORY TRACT. SYMPTOMS ARE OFTEN A MEIAGLIC TASTE.

  EMERGENCY & FIRST AID TREATMENT: REMOVE FROM EXPOSURE.
- 9. IRON ..... EFFECTS & EXPOSURE: INHALATION OF OXIDE OR DUST CAN RESULT IN SIDEROSI WHICH CAUSES A SHORTNESS OF BREATH AND COUGHING TENDENCIES.

  EMERGENCY & FIRST AID TREATMENT: REMOVE FROM EXPOSURE & OBTAIN MEDICAL ATTENTION.
- 10. LEAD ...... EFFECTS & EXPOSURE: SHORT TERM EXPOSURE SYMPTOMS MAY ENCLUDE STOMACH CRAMPS, PERSISTEMT VOMITING, SEVERE ANEMIA, PERIPHERAL NEUROPATHY AND ACUTE ENCEPHALOPATHY FOLLOWED BY COMA, CARDIORESPIRATORY ARREST AND DEATH. LONG TERM EXPOSURE SYMPTOMS ARE THE ABOVE WITH A METALLIC TASTE IN MOUTH. WAEKNESS OF EXTENSOR MUSCLES OF THE WRIST & ANKLES IS NOTICEABLE IN SERIOUS CASES.

EMERGENCY & FIRST AID TREATMENT: NO IMMEDIATELY FIRST AID IS GENERALLY NECESSARY. BIOLOGICAL MONITORING UNDER THE DIRECTION OF A PHYSICAN IS REQUIRED IN ACCORDANCE WITH OSHA REGULATIONS.

- 1. MAGNESIUM ... EFFECTS OF EXPOSURE: HEAVY EXPOSURE TO FUME MAY BE IRRITATING TO EYES,
  NOSE AND THROAT. CAN CAUSE METAL-FUME FEVER.

  EMERGENCY & FIRST AID TREATMENT: EYE WASH STATION FACILITIES SHOULD BE
  USED IMMEDIATELY. NO CONTACT LENSES SHOULD BE WORN IN THIS AREA.
- 12. MANGANESE ... EFFECTS & EXPOSURE: MODERATELY TOXIC. MAY CAUSE NOSE TO BLEED,
  IRRITATION TO THE THROAT AND SKIN. PROLONGED EXPOSURE CAN EFFECT THE
  CENTRAL NERVOUS SYSTEM.
  EMERGENCY & FIRST AID TREATMENT: ON IRRITATION WASH THOROUGHLY. ON
  INGESTION INDUCE VOMITING. OBTAIN MEDICAL ATTENTION.
- ANICKEL ..... EFFECTS & EXPOSURE: DETEN CAUSES ALLERGIC DERMATITIS. INHALATION CAN

  CAUSE HYPERTROPHIC RHINITIS AND NASAL SINUSITIS. IN EXTREME CASES IT

  IS SUSPECTED OF CAUSING CANCER OF THE NAVAL CAVITIES, LUNGS AND OTHER

  ORGANS.

  EMERGENCY & FIRST AID TREATMENT: ANNUAL MEDICAL MONITORING BY A

  PHYSICAN IS RECOMMENDED IN AREAS WHERE CONCENTRATIONS ARE GREATER THAN

  15 UGNI/M3 TWA FOR A 40 HOUR WORK WEEK.
- 14. PHOSPHOROUS. EFFECTS & EXPOSURE: INHALATION MAY CAUSE OSTEOMYELITIS OF THE JAW BONE.

  SKIN CONTACT BY BURNING PHOSPHOROUS SLIVERS WILL CAUSE SEVERE BURNS.

  EMERGENCY & FIRST AID TREATMENT: DOUSE BURNING SLIVERS WITH A 1 5%

  SOLUTION OF AQUEDUS COPPER SULPHATE. THEN REMOVE SLIVERS WITH LARGE

  QUANTIES OF WATER. MEDICAL ADVISE NEED BE SOUGHT IN CASES OF

  OSTEOMYELITIS.
- 15. SILICON .... EFFECTS & EXPOSURE: IN A COLD STATE SILICON IS NOT DANGEROUS.

  EMERGENCY & FIRST AID TREATMENT: NONE NECESSARY
- 16. SILVER ..... EFFECTS & EXPOSURE: LOCALIZED ARGYRIA IS CAUSED BY SILVER PARTICLES ON THE SKIN. EXCEPT FOR A BLUISH COSMETIC DISFIGUREMENT IT IS GENERALLY CONSIDERED BENIGN.

  EMERGENCY & FIRST AID TREATMENT: None NECESSARY
- 17. TIN ...... <u>EFFECTS & EXPOSURE</u>: TIN POWDER IS MODERATELY IRRITANT TO THE EYES AND AIRWAYS.

  <u>EMERGENCY & FIRST AID TREATMENT</u>: REMOVE FROM EXPOSURE.
- 18. ZINC ..... EFFECTS AND EXPOSURE: EXPOSURE TO ZINC DXIDE FUME CAN CAUSE METAL-FUME FEVER. SYMPTOMS RESEMBLE INFLUENZA W/ CHILLS & NAUSEA.

  EMERGENCY & FIRST AID TREATMENT: USUALLY LASTS LESS THAN 24 HOURS WITH NO KNOWN TREATMENT OR LASTING ILL EFFECTS.

THE ABOVE INFORMATION IS PROVIDED FOR THE SOLE PURPOSE OF ASSESSING POTENTIAL HAZARDS THAT MIGHT ARISE FROM THE USE OF THIS MATERIAL. THE INFORMATION IS GIVEN IN GOOD FAITH AND IS BELIEVED TO BE CORRECT, BUT WITHOUT GUARANTEE. WE DO NOT ASSUME RESPONSIBILITY FOR THE RESULTS OF ITS USE.

#### SOURCES

- 'HANDBOOK OF HAZARDOUS MATERIALS' (2ND EDITION) .. ALLIANCE OF AMERICAN INSURERS
- 'ENCYCLOPAEDIA OF OCCUPATIONAL HEALTH & SAFETY' (VOL I & 11) INTERNATIONAL LABOUR OFFICE
- 'THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES IN WORK ENVIRONMENT' .. ACGIH
- 'METALS HANDBOOK .. PROPERITIES OF METALS (8TH ED .. VOL I) .. AMERICAN SOCIETY FOR METALS
- 'STANDARDS HANDBOOK' (PART 7) .... COPPER DEVELOPMENT ASSOCIATION INC.

# MATERIAL SAFETY DATA

Phosphoric Acid

MONSANTO PRODUCT NAME

#### PHOSPHORIC ACID

MONSANTO COMPANY 800 N. LINDBERGH BLVD. ST. LOUIS, MO 63167

Emergency Phone No. (Call Collect) 314-694-1000

#### PRODUCT IDENTIFICATION

Synonym(s): Phos acid; Orthophosphoric acid

Chemical Name: Phosphoric acid

Chemical Formula: H<sub>3</sub>PO<sub>4</sub>

Chemical Family: Mineral acid CAS No.: 7664-38-2

TSCA Inventory: Phosphoric acid appears on the Inventory of Chemical

Substances published by the U.S. Environmental Protection

Agency (EPA) under authority of the Toxic Substances

Control Act (TSCA).

Dot Proper Shipping

Name: Phosphoric Acid

Dot Hazard Class/

I.D. No.: Corrosive material/UN1805

**DOT Label(s):** Corrosive

U.S. Surface Freight

Classification: Phosphoric Acid

Reportable Quantity (RQ)
Under U.S. EPA CERCLA

Regulations: 5.000 lbs.

Hazardous Chemical(s) Under OSHA Hazard

Communication Standard: The substance listed below is identified as a hazardous chemical

under the criteria of the OSHA Hazard Communication Standard

(29 CFR 1910.1200):

Phosphoric acid, CAS Reg. No. 7664-38-2

#### WARNING STATEMENTS

DANGER!

CAUSES BURNS TO EYES AND SKIN

#### PRECAUTIONARY MEASURES

Do not get in eyes, on skin, on clothing.

Avoid breathing mist.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

CORROSIVE TO MILD STEEL

#### EMERGENCY AND FIRST AID PROCEDURES

FIRST AID: IF IN EYES OR ON SKIN, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse.

IN CASE OF: SPILL OR LEAK, contain spills and leaks to prevent discharge to the environment.

#### OCCUPATIONAL CONTROL PROCEDURES

Wear chemical safety goggles to prevent eye contact. Have eye baths Eve Protection:

immediately available where eye contact can occur.

Skin Protection: Wear appropriate impervious gloves and protective clothing to prevent skin

contact. Wear face shields and impervious aprons when splashing is likely. Remove contaminated clothing promptly and launder before reuse. Provide safety shower at any location where skin contact can occur. Wash contaminated skin

promptly.

Respiratory

Protection: Use NIOSH approved equipment with full facepiece when airborne exposure

limits are exceeded. Consult respirator manufacturer to determine appropriate

type equipment for given application.

Ventilation: Provide ventilation to minimize exposure. Local exhaust ventilation preferred.

Airborne Exposure

Limits:

Typical Product Composition: Phosphoric acid in water

OSHA PEL/TWA: 1 mg/m<sup>3</sup> ACGIH TLV®/TWA: 1 mg/m³ TLV®/STEL: 3 mg/m³

#### FIRE PROTECTION INFORMATION

Although phosphoric acid is not combustible, it can react with metals to Extinguishing Media:

liberate hydrogen, a flammable gas.

#### REACTIVITY DATA

Materials To Avoid: Avoid contact with materials such as sulfides and sulfites which could

release toxic gases, and be cautious in mixing with strong bases

because high heat of reaction can generate steam.

Hazardous Decomposition

Products: None.

Hazardous Polymerization: Does not occur.

# Monsanto Material SAFETY DATA

#### **HEALTH EFFECTS SUMMARY**

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of phosphoric acid on the health of industrially exposed individuals and to support the Precautionary Statements and Occupational Control Procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

#### Human Experience

Dermal contact is expected to be the primary route of occupational exposure to phosphoric acid. Phosphoric acid is considered to be corrosive to the eyes and skin. Phosphoric acid may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred. Occupational exposure to this material has not been reported to cause significant adverse health effects when recommended safety precautions are followed.

#### Toxicological Data

Data from Monsanto studies indicate the following:

	Acute Oral LD <sub>50</sub> (Rat)	Acute Dermal LD <sub>50</sub> (Rabbit)	Eye Irritation FHSA 2	Skin Irritation 4-hr Rabbit	Skin Irritation 4-hr DOT Rabbit
Phosphoric acid 75%	4,400 mg/kg, Slightly Toxic		Corrosive	Corrosive	Noncorrosive
Phosphoric acid 80%	4,200 mg/kg, Slightly Toxic		Corrosive .	Corrosive	Noncorrosive
Phosphoric acid 85%	3,500 mg/kg, Slightly Toxic		Corrosive	Corrosive	Corrosive

The results of the acute oral and dermal tests indicate that these concentrations of phosphoric acid are slightly toxic by ingestion in single oral doses and by single dermal applications. Following a 24-hour exposure, irreversible eye and skin damage occurred at all tested concentrations of phosphoric acid.

#### Additional Information

Phosphoric acid has a low vapor pressure at room temperature and is not expected to present a significant inhalation hazard under ambient conditions. Phosphoric acid, however, can be irritating to the respiratory tract if inhaled as a mist or if the material is vaporized.

#### PHYSICAL DATA

Appearance and Odor: Clear, colorless, syrupy liquid; no foreign odor

Vapor Pressure @ 20°C (mm Hg): 0.0285 (100% acid)

Solubility in Water: Complete

	75%	80%	85%
Boiling Point (760 mm Hg):	135°C	144°C	154°C
Freezing Point:	−17.5°C	+4.6°C	+21.1°C
Viscosity @ 25°C (centistokes):	12	17	23
Specific Gravity @ 25°C/15.5°C:	1.575	1.633	1.692
% Equivalent H <sub>3</sub> PO <sub>4</sub> :	75.1	80.35	85.5
Lbs./gallon @ 25°C:	13.17	13.66	14.15

**Note:** These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

#### SPILL, LEAK & DISPOSAL INFORMATION

# Emergency Spill and Leak Information:

Contain spills and leaks to prevent discharge to the environment. Neutralize cautiously with a base such as soda ash.

Phosphoric acid, as currently defined, is a *hazardous substance* under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). If 5,000 pounds or more are released into the environment, it must be reported to the National Response Center (800-424-8802 or 202-426-2675). Since local, state and federal laws may vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

Keep product out of sewers, watersheds and water systems.

Disposal Information: Dispose of in accordance with all applicable federal, state and local regulations.

As currently defined in the federal Resource Conservation and Recovery Act (RCRA), unneutralized phosphoric acid, when discarded, is a *hazardous waste* exhibiting the characteristics of corrosivity (D-002). See 40 CFR 261.22. Its disposal, therefore, is regulated by federal RCRA regulations. Consult your attorney or appropriate regulatory officials for information regarding additional state and local waste disposal requirements.

#### **ADDITIONAL COMMENTS**

Store in rubber-lined or 316 stainless steel tanks designed for H<sub>3</sub>PO<sub>4</sub>. Store drums away from heat and out of direct sunlight.

10/1/85 MSDS NO.: 007664382

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

Product Acceptability Coordinator **Detergent Materials** Monsanto Industrial Chemicals Co. 314-694-2096 (A Unit of Monsanto Company)

Although the information and recommendations set forth herein (hereinafter "In-formation") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Phosphoric Acid



# U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION

PLASTAL Cool Tool

Box 810, 36 Draffin Road, Hilton, N.Y. 14468

LEUFACTURER'S NAME		<u></u>	•		GENCY TEL 5-392-3		E NO.
MONROE FLUID TECHNOLOGY, I	IP CODE			1 /1:	392-3	3434	
36 Draffin Road, Hilton, N		rk 14468	}				
HEMICAL NAME AND SYNONYMS			,	TRADE NAME AND SYNONYMS			
N/A			) 	COOL-TOOL			
HEMICAL FAMILY N/A			FORMU	Mixture		•	
N/A	SECT	ION II: HAZARI	MI 2UOC				<del>'</del>
PAINTS, PRESERVATIVES/SOLVENTS	5	TLV (UNITS)		ALLOYS AND METALLIC COATI	NGS	2	TLV (UNITS)
PIGMENTS			BASE	METAL			
CATALYST			ALLO	YS			
VEHICLE			META	LLIC COATINGS			
SOLVENTS				R METAL PLUS	<del></del>	1	
l,l,l-trichloroethane*	33	350 ppr		ING OR CORE FLUX	·	<del> </del>	
ADDITIVES			OTHE	RS			
OTHERS				·		T	
* CAS NO. 71-55-6	Misseupe			COLUMN ON CARCON		-	TLV
	MIXIURE	OF OTHER L		SOLIDS, OR GASES*		<b></b>	(TINUTS
Mineral Oil CAS NO. 64741	1-53-5				•	34	5mg/m
							ł
						1	Mist
		ECTION III: PI					<del></del>
COILING POINT (OF)		198	SPEU	FIC GRAVITY (H <sub>2</sub> 0 = 1)			1.03
APOR PRESSURE (mm Hg.)	······			ENT VOLATILE			
APOR PRESSURE (mm Hg.) @ 20°C		92.7		LUME (%)			35
APOR DENSITY (AIR = 1)		11 =	•	PRATION RATE			< 1
		4.5	BUL	/l Acetate = l			<del>-   `</del>
OLUBILITY IN WATER		nil					
PPEARANCE AND ODOR Golden oil w	ith ch	aracter	istic	odor.			
				N HAZARD DATA			
LASH POINT (METHOD USED)	- 0			FLAMMABLE LIMITS	Lei	$\Box$	Uel .
COC greater than 35	OF_		*		not	dette	ermined
Water fog. foam. dr	y chem	nical					
PECIAL FIRE FIGHTING PROCEDURES							
Use usual procedure	s as w	vith oil	fire	e, may emit CO <sub>2</sub> , CC	, HCL		
·				_			
MUSUAL FIRE AND EXPLOSION HAZARDS							<u>·                                     </u>
Closed containers w	ill pr	ressuriz	e at	high temperature.			
		<del></del>					

				CATIO	W. M. HCALY	11 11 4 7 4	00 017	
				SECTIO	N V: HEALT	H HALA	KU UAT	<u> </u>
THRESHOLD LIMIT VALUE					3			· ·
350 ppm: 500 p	pm Max.	for	vapor	r. 5	mg/m <sup>3</sup> :	for c	oil m	ists.
EFFECTS OF OVEREXPOSU	RE	<del></del>					<del></del>	
						•		1000
Anesthetic eff	ects may	7 00	cur 1	n th	e range	<u> 01</u>	500	to 1000 ppm of vapor.
					•			
EMERGENCY AND FIRST ALL	D PROCEDURE	5						
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<u>inhalation: Rel</u>	move to	1 re	sn al	r, K	eeb wa:	rm ar	<u>10 qu</u>	iet until recovery.
					•			
Skin and Eves:	Flush e	eyes	with	ple	nty of	wate	er. F	or skin and eyes: Get medical
attention if i	rritatio	n d	evelo	ns.	Ingest	ion:	Trea	t symptomatically; Low oral
towisity stom	2222222	),, a +	100 0	53. 53. h	2116001	20.1.	1100	by mp oom a or are and a second or are
toxicity, stom	aen evae	iuat.	TON III	ay U	e desi.	reu.		
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	UNSTABL	_ 1	CON	DITION	IS TO AVOID	1		
	חמיויסרו	-E						•
STABILITY	<del> </del>				<del></del>			
-	STABLE	Ε	x 0	202	flomob	*** ~ 3	1245	arcs can decompose vapors.
	<u></u>		$\Lambda$	hell	TTames	, wc.	raing	, ares can decompose vapors.
II. COMPATIBILITY (MATERI								
Strong oxidizi:								
HAZARDOUS DECOMPOSITIO	ON PRODUCTS	Exp	osure	to	high to	emper	ratur	es or open flames generates
								ene and Chlorine.
Hydrogen chion	Tue and	VC1	y Sina	<del>11 a</del>				ene and childrine.
	MAY	r occu	JR	- 1	CONDITIO	M2 10 A	שוטעי	•
HAZARDOUS								
POLYMERIZATION	w	LNOT	OCCUR					
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					II: SPILL OR	LEAK P	ROCEDI	URES
S TO BE TAKEN IN CA	SE MATERIAL	IS REL	LEASED O	RSPIL	LED			
n. wine or s	oak up w	vith	abso	rben	t mate	rial	and	bury in approved landfill.
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WASTE DISPOSAL METHOD								
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approved facil	ity.							
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			SECTION	VIII- S	PECIAL PRO	TECTIC	N INFO	MATION
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Concentration	above 2%	<u>-Us</u>	<u>e sel</u>	<u>1-cc</u>	<u>ontaine</u>	d bre	<u>eathi</u>	ng apparatus.
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VENTILATION			•					None
	ECHANICAL (C	GENER	ALI	<del></del>				OTHER •
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IP	<u>rovide v</u>	vent	listi	on t	o cont			
PROTECTIVE GLOVES						EYE PR	OTECT	ON
Neorrene to av	oid prol	long	ed co	ntac	et l	••	Saf	Cety glasses.
OTHER PROTECTIVE EQUIP	MENT							
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PRECAUTIONS TO BE TAKE								
Handle with re	asonable	e ca	re. A	void	d breat	hing	vapo	ors in concentrations over
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	<u> </u>	n pe	an 01	500	ւ ըրա.	2014	= TII	cool, dry place.
OTHER PRECAUTIONS	•							•
In risting, oi	1 mist s	shou	ld be	con	frolle	d. Do	o not	weld or cut empty containers
7	2							
James & for	Hl	,			חר	/85		
OFFERFE BY	~~~~					, 57		
✓ MESSIBY	7				DATE			•

# CERRO COPPER PRODUCTS COMPANY PLASTIC FIRE CINC MSDS NUMBER + COPC-90-8201 APPROVALS: Form

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	348ET 37566	7: <u></u>						
MANUFACTURER'S NAME	_ 71755	ದಾರಾಚಾತ್ಮಿತ್ವವನ್ನು -	· K )			CONTACT	r	
Missouri Minera	ls Ind	corporates				Edward	l L. Hanste	in
ADDRESS (STREET, CITY, STATE AND	ZIP CODE)	· · · · · · · · · · · · · · · · · · ·				EMERGE	NCY TELEPHONE	NO.
High Hill, Miss	•	63350	•			(	585-22	
-								
TRADE HAME, COMMON NAME OR						APPROVI	ED BY MC	
Hawthorne Bond	& Plas	stic Fireclay				DATE C	06/06/86	
CHEMICAL FAMILY OR PRODUCT TY	PE				<del></del> .	·	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	
		SECTION II	СОМРО	SITION			•	
CHEMICAL NAME	%	COMMON NAME	REG (Y/N)		PERM	BHA IIBBIVE URE LIMIT	AQBIH TLV	CAR.
Silicon Oxide*	55	Silica	Y	1480-60-	-7 15mc	$\frac{1}{m}$	10 mg/m	
					Tot	tal	Total	
Aluminum Oxide	40	Alumina	У	1344-28-	-1	1	11	N
Titanium Dioxide	2	Titania .	V	13463-67	7-7		11	N
Silicon Oxide	7	Ouartz	·   X	14808-60	)-7		0.1  mg/m	3 N
			_					+-
*Most of Alumina	and S	lica is combi	ned a	aluminu	m silio	cate (	Kaolinit	el)
*Regulated as per list	s: OSH	A 29CFH 1910, sub	part Z;	ACGIH,HH	SINIP; &	IAHC.		
•	SI	ECTION III PHYSICA		CHEMICAL D	ATA			
BOILING POINT	N/A	MELTING POINT	3100	F	SPECIFIC G	RAVITY	2.0	
	N/A	PERCENT VOLATILE BY		V/A	VAPOR DE		N/A	
	N/A	SOLUBILITY IN WATER				IN ALCOH	or Insolu	np1:
SOLUBILITY IN OTHER SOLVENT	N/A			dorless		r mate	erial	
		TION IV FIRE AND						
FLAGUE POINT				TON TIAZANE		DI 5 1 11 4 77		
FLASH POINT None  EXTINGUISHING MEDIA	<del></del>	DO USED)			FLAMMA	BLE LIMITE	S LEL UE	<u> </u>
SPECIAL FIRE FIGHTING PROCEDURE	N/2							<del></del> -
EXPLOSION POTENTIAL	N/A	· · · · · · · · · · · · · · · · · · ·			<del> </del>			
	SECTI	•	ST AID	AND MEDICA	L DATA			-
PRIMARY ROUTE(S) OF ENTRY		D CHRONIC HEALTH EFFECT	FIRST AID	FIRST AID AND MEDICAL INFORMATION				
INHALATION	Short	term - nuisa	nce di	1ct	Short	term	- remove	a +
		long term - c			j .		dust free	a ai
INGESTION		<u> </u>	ilico	sis	Long	rerm	- consul	
	.,	Vma				11 / 3	physica	an
SKIN CONTACT &	NC	one Known				N/A	· <del></del>	
SKIN CONTACT & ABSORPTION	Ab	orasive			Was	sh are	a	
EYE	Ab	rasive			Treat	as p	article	in
OTHER POTENTIAL HEALTH RISKS	NA	AIF			NAIF			
					1			

SECTION VI CORROSIVITY AND REACTIVITY DATA							
STABILTY	UNSTABLE (1	STABLE P	Ţ		POLYMERIZATION	MAY OCCUR ()	WILL NOT OCCUR TO
NCOMPATI	BILITY (MATERIALS	DIOVA OT	Inert				
ECOMPOS	TION PRODUCTS			<del></del>			
			Inert				

Keep Dry

	SECTION VII STORAGE, HANDLING AND USE PROCEDURES
NORMAL STORAGE AND HANDLIN	3
	Keep Dry
NORMAL USE	
	Avoid breathing of dust
STEPS TO BE TAKEN IN CASE OF	LEAKS OR SPILLS
,	Follow normal housekeeping procedures
TE DISPOSAL METHOD	
	Remove to approved land fill or dump

	SECT	TION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY P	PROTECTION (SPECIFY TYPE)	Nuisance dust respirator
VENTILATION	LOCAL	Recommended
	MECHANICAL (GENERAL)	Recommended
	OTHER	N/A
PROTECTIVE GL	OVES	Recommended
EYE PROTECTIO	Ж	Recommended
OTHER EQUIPM	ENT	N/A
MEASURES TO MATERIAL	No special p	AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS PROCEDUTIONS

SECTIO	ON IX SPECIAL PRECAUTIONS
PERCAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	Avoid breathing of dust
OTHER PRECAUTIONS -	None

BETZ INDUSTRIAL

#### 4636 SOMERTON ROAD, TREVOSE, PA. 19047 BETZ MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT : POLYMER 3315L

EFFECTIVE DATE 10-31-88 PRINTED: 12/17/88

PRODUCT APPLICATION : FLOCCULANT

----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

PETROLEUM DISTILLATES \*\*\* (NAPHTHA); CAS#8002-05-9; POTENTIAL EYE, SKIN AND INHALATION IRRITANT; COMBUSTIBLE LIQUID; PEL: 500 PPM; TLV: NONE.

----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% SOL.

(APPROX.) 5.0 ODOR: HYDROCARBON

FL.PT.(DEG.F): 200 SETA(CC)

SP.GR.(70F)OR DENSITY: 1.008

VAPOR PRESSURE(mmHG): NA

VAPOR DENSITY(AIR=1): NA

VISC cps70F: (1% SOLN)225

**%SOLUBILITY(WATER):** 5

EVAP.RATE: 1 ETHER=1

APPEARANCE: WHITE

PHYSICAL STATE: EMULSION

FREEZE POINT(DEG.F): 24

----SECTION 3-----REACTIVITY DATA----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

#### MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POLYMER 3315L

EFFECTIVE DATE 10-31-88

----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

VAPORS, GASES, MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

#### SYMPTOMS OF EXPOSURE \*\*\*

EXCESSIVE SKIN CONTACT MAY CAUSE DEFATTING OR DRYING OF SKIN; EXCESSIVE INHALATION OF VAPORS MAY CAUSE DIZZINESS, HEADACHE AND NAUSEA.

----SECTION 5-----FIRST AID INSTRUCTIONS------SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO, SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER. FOAM OR WATER CREATE A SLIPPERY CONDITION. SPREAD SAND OR GRIT

#### MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POLYMER 3315L EFFECTIVE DATE 10-31-88 ----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION\*\*\* ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS RECOMMENDED RESPIRATORY PROTECTION\*\*\* IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES. RECOMMENDED SKIN PROTECTION\*\*\* NEOPRENE GLOVES WASH OFF AFTER EACH USE.REPLACE AS NECESSARY RECOMMENDED EYE PROTECTION\*\*\* SPLASH PROOF CHEMICAL GOGGLES ----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----STORAGE INSTRUCTIONS\*\*\* KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE. PROTECT FROM FREEZING HANDLING INSTRUCTIONS\*\*\* IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE NORMAL CHEMICAL HANDLING THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD HAROLD M. HERSH (ENVIROMENTAL INFORMATION COORDINATOR) APPENDIX: REGULATORY INFORMATION THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT. ...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY ... REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT: TREAT AS OIL SPILL ...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE ...DOT HAZARD CLASSIFICATION: NOT APPLICABLE ...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE ...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS ... SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS ... SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS ... SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) ...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS NFPA/HMIS: HEALTH - 2; FIRE - 1; REACTIVITY - 0; SPECIAL - NONE; PE - B

-TYPE 1- 3

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1367

# MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NO. 314–221–1740
ME AND SYNONYMS
(4 Ca0 A1 0 Fe 0

SECTION	· 11 V	HAZAF	ROOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	×	TLV [Units]	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A		į	ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS N/A			N/A		
HAZARDOUS MIXTUR	ES OF	OTHER LI	QUIDS, SOLIDS, OR GASES	×	TLV (Units)
No known hazardous ingredient	s. I	Portlan	d Cements are classified by OSHA		:
(29 CFR 1910.1000 Table Z-3)	MSHA	(30CFR	55.5-1, Ref. 2, ACGIH TLV's for		
1973 Appendix E), and ACGIH (	TLV's	for 1	985-6, Appendix D) as nuisance		
dusts. They are neither haza	rdous	s nor t	oxic. Portland cements are NOT		

listed by NTP, TARC, or I				
	SECT	TION III - I	PHYSICAL DATA	
BOILING POINT (F.)		N/A	SPECIFIC GRAVITY (H20-1)	3.0 - 3.2
VAPOR PRESSURE (mm Hg.)		N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)		N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER S	light	0.1 - 1.	ok.	
APPEARANCE AND ODOR G	ray Pow	der - No	odar	

. SECTION IV - FIRE AND EXPLOSION HAZARD DATA						
FLASH POINT (Method used) Honcombustible or explosive	FLAMMABLE LIMITS N/A	Lai	1 Uel			
EXTINGUISHING MEDIA						
N/A SPECIAL FIRE FIGHTING PROCEDURES N/A						
· · · · · · · · · · · · · · · · · · ·						
UNUSUAL FIRE AND EXPLOSION HAZARDS						

SECTION V + HEALTH HAZARD DATA	i
Respirable Dust-5mg/m Total Dust-10mg/m Particles/ft 3-30 million	ĺ
Acute: Wet cement, especially as an ingredient in plastic (unhardened) concrete,	
mortar, or slurries can dry the skin and cause alkali burns. Cement dust can irrita	
EMERGENCY AND FIRST AID PROCEDURES Irrigate eyes immediately and repeatedly with water and get prompt medical	(* B
attention. Wash exposed skin areas with soap and water.	

STABILITY	UNSTABLE	STABLE CONDITIONS TO AVOID						
	STABLE	Х	Keep d	ry until used				
None	LTM (Manerialis id							
HAZARDOUS	1	YOCCUR		CONDITIONS TO AVOID				
POLYMERIZAT		L NOT OCCUR	X					

SECTION VII - SPILL OR LEAK PROCEDURES							
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Use dry cleanup methods that do not disperse the dust into the air. Avoid breathi							
the dust. Emergency procedures are not required.							
•							
Maste Disposal METHOD Material can be disposed of as common waste or returned to the container for later							
use if it is not contaminated.							

	SECTION VIII - SPECIAL PROTECTION IN	NFORMA	ATION			,
RESPIRATORY PRO	ronments, the use of NIOSH approved dust	filter	type	respirator	is	recca
VENTILATION	Sufficient to avoid exceeding threshold	1ºEGIAL	valu	е		
	MECHANICAL (General)	OTHER		•		
4407ECTYVE TILL Yes	VES EYE PROTECTION Safety Clas	sses.	٠			
OTHER PROTECT	VE EQUIPMENT	nged.	•	•		

	SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKER May cause a severe	skin irritation and burns on individuals with sensitive skin.
Avoid skin and eye	contact - Rinse exposed areas immediately and repeatedly with wa
OTHER PHECAUTIONS .	and get prompt medical attention.

#### PAGE (2)

Form OSHA-20 Rev. May 72

\* eyes and upper respiratory system.

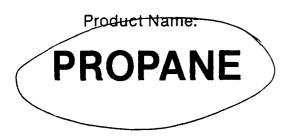
Chronic: Cement dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Date

October, 1985

# **MATERIAL SAFETY DATA SHEET**

Page 1 of 6



PHILLIPS PETROLEUM COMPANY Bartlesville, Oklahoma 74004

Emergency Phone Nos. 918-661-3865 (during business) 981-661-8118 (after hours)



WORLDWIDE



**USA AND CANADA** 

OTHER COUNTRIES

# PRODUCT IDENTIFICATION

Synonyms: Dimethylmethane

Chemical Name: Propane

Chemical Family: Paraffinic Hydrocarbon

Chemical Formula: C₃H<sub>8</sub>

CAS Reg. No: 74-98-6

Product No: NE

Product and/or Components Entered on EPA's TSCA Inventory: Yes X No

# HAZARDOUS COMPONENTS

Ingredients	CAS Number	% By Wt	OSHA PEL	ACGIH TLV
Propane	74-98-6	>90	1000 ppm	Simple Asphyxiant
Propylene	115-07-1	<5	NE	Simple Asphyxiant
n-Butane	106-97-8	< 2.5	NE	800 ppm

<sup>\*</sup>See Additional Comments (Page 6) for exact compositions.

# PERSONAL PROTECTION INFORMATION

Ventilation: Use adequate ventilation to control exposure below recommended levels.

Respiratory Protection: Not generally required. When entry into or exit from concentrations of unknown exposure, use NIOSH/MSHA approved self-contained breathing apparatus (SCBA).

Eye Protection: Use safety glasses with side shields.

Skin Protection: No special garments required. Avoid unnecessary skin contamination with material.

NOTE: Personal protection information shown above is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

# HANDLING AND STORAGE PRECAUTIONS

Avoid inhalation and skin and eye contact. Wear protective equipment and/or garments described above if exposure conditions warrant. Wash hands after handling.

Store in a cool, well ventilated area away from ignition sources. Provide means for controlling leaks. Bond and ground during transfer. Keep containers closed.

# REACTIVITY DATA

Stability: Stable Unstable Conditions to Avoid:
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents.
Hazardous Polymerization: Will Not Occur X May Occur Conditions to Avoid

Hazardous Decomposition Products: Carbon oxides formed when burned.

## HEALTH HAZARD DATA

RECOMMENDED EXPOSURE LIMITS: OSHA PEL 1000 ppm (propane). ACGIH simple asphyxiant (propane)

#### ACCUTE EFFECTS OF OVEREXPOSURE:

EYE: Very high gas concentrations may cause mild irritation effects. Liquefied gas may cause freeze-burns upon direct contact.

SKIN: Very high gas concentrations may cause mild irritation to mucous membranes. Liquefied gas may cause freeze-burns upon direct contact.

INHALATION: Simple asphyxiant. Extreme over exposure may produce dizziness, headache, disorientation, excitation, fatigue, inability to concentrate, vomiting, coughing, anesthesia, unconsciousness and death.

INGESTION: Not a likely exposure route. Liquefied gas may cause freeze-burns to the mucous membranes and possible central nervous system depression.

#### SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

Exposure to 1000 ppm for 8 hours a day, 5 days a week, for approximately 2 weeks produced no abnormal reactions, including cardiac, pulmonary, and neurologic functions in humans.

#### OTHER HEALTH EFFECTS:

Propane was not mutagenic in the AMES assay.

#### **HEALTH HAZARD CATEGORIES:**

	Animal	Human		Animal	Human
Known Carciogen			Toxic		
Suspect Carcinogen			Corrosive		
Mutagen			Irritant		
Teratogen			Target Organ Toxin		$\mathbf{X}$
Allergic Sensitizer				and skin	
Highly Toxic			freez	e-burns	
			***************************************		

#### FIRST AID AND EMERGENCY PROCEDURES:

EYE: Immediately flush eyes with running water for at least 15 minutes. If irritation develops, seek medical attention.

SKIN: Flush skin with water for 15 minutes. If irritation develops, seek medical attention.

INHALATION: Remove from exposure. If breathing ceases, administer artificial respiration followed by oxygen. Seek medical attention.

INGESTION: Seek immediate medical attention.

# ADDITIONAL COMMENTS

Phillips believes that the information contained herein (including data and statements) is accurate as of the date hereof. NO WARRANTY OR MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE INFORMATION HEREIN PROVIDED. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and the information referred to herein are beyond the control of Phillips (references to Phillips including its divisions, affiliates, and subsidiaries), Phillips expressly disclaims any and all liability as to any results obtained or arising from any use of the product or such information. No statement made herein shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

## PHYSICAL DATA

Appearance: Colorless liquefied petroleum gas

Odor: Repulsive

Boiling Point: -44°F (-42°C)

Vapor Pressure: 208 psig at 100°F

Vapor Density (Air = 1): 1.5

Solubility in Water: Negligible

Specific Gravity ( $H_2O = 1$ ): 0.508-0.510 at 60/60°F

Percent Volatile by Volume: 100

Evaporation Rate ( Ethyl Ether = 1): >1

Viscosity: NE

## FIRE and EXPLOSION DATA

Flash Point (Method Used): -156°F (-104°C) (Estimated)

Flammable Limits (% By Volume in Air): LEL 2.1 UEL 9.5

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO<sub>2</sub>).

Special Fire Fighting: Evacuate area of all unnecessary personnel. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described on Page 2 if conditions warrant. Shut off source, if possible. Water fog or spray may be used to cool exposed containers and equipment. Allow fire to burn until gas flow is shut off, if possible.

Fire and Explosion Hazards: Carbon oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate in low areas and/or spread along ground away from handling site.

# SPILL, LEAK and DISPOSAL PROCEDURES

Precautions Required if Material is Released or Spilled: Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments described on Page 2 if exposure conditions warrant. Shut off source, if possible. Protect from ignition. Ventilate area thoroughly.

Waste Disposal (Insure Conformity with All Applicable Disposal Regulations): Incinerate or otherwise manage at RCRA permitted waste management facility.

## DOT TRANSPORTATION

Shipping Name: Liquefied Petroleum Gas

Hazard Class: Flammable Gas

ID Number: UN 1075

Marking: Liquefied Petrolem Gas/UN 1075

Label: Flammable Gas

Placard: Flammable Gas/1075 Hazardous Substance/RQ: NA

Shipping Description: Liquefied Petroleum Gas, Flammable Gas, UN 1075

Packaging References: 49 CFR 173.304, 173.306, 173.314, and 173.315

# RCRA CLASSIFICATION (FOR UNALDERATED PRODUCT AS A WASTE)

Ignitable

# PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT

Wear protective equipment and/or garments described on Page 2 if exposure conditions warrant. Contact immediate supervisor for specific instructions before work is initiated.

## HAZARD CLASSIFICATION

	FOLLOWING HAZARD DEFINITION( H REGULATIONS (29 CFR PART 1910	
☐ Not Hazardous	☐ Flammable Solid	☐ Oxidizer
Combustible Liquid	☐ Flammable Aerosol	Pyrophoric
Compressed Gas	☐ Explosive	☐ Unstable
🔀 Flammable Gas	X Health Hazard (See Page 3)	☐ Water Reactive
Flammable Liquid	Organic Peroxide	

NATIONAL REFRACTORIE MINERALS CORPORATION

# 

# MATERIAL SAFETY DATA SHEET

CONTRACTOR STATE OF THE PARTY O

Company / Plant	issue Date	Identification Number	
National Refractories & Minerals Corp. One Kaiser Plaza, Suite 650 Oakland, California 94612	Revised August 7, 1985	NA	
Trade Name (Common Name or Synonym)	Emergency Phone Number		
Purotab (all)	(415) 462-1147		
Chemical Name	Formula	DOT Identification Number	
NA	NA	NA	

#### I. INGREDIENTS

Material or Component

Calcium aluminate cement (CAS # 65997-16-2) present in this product is less alkaline than Portland Cement. Other ingredients in this product have a toxicity no greater than currently listed for nuisance dusts. See Section V.

1984-85 ACGIH TLV's :  $5 \text{ mg/m}^3$  respirable dust,  $10 \text{ mg/m}^3$  total dust. OSHA 1910.1000 PEL's :  $5 \text{ mg/m}^3$  respirable dust,  $15 \text{ mg/m}^3$  total dust.

#### II. PHYSICAL DATA

Material is (Al Normal Conditions): Liquid Solid	Gas 🙀 Other	Gran	nular	dry	Appearance and Size: Color:	Odor -1/4" Grey	Odor:	None
Acidity/Alkalinity  pH = NA	Melting Point Boiling Point	NA NA	oF oF	Specific Gravit Solubility in wa		2.6-3.0 ght) N11		Vapor Pressure (mm Hg at 20°C) NA

# III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection Respirator for particulates ap-	Hands, Arms, and Body
proved by NIOSH/MSHA and adequate for contaminant concentrations encountered.	Gloves are recommended
Eyes and Face ^	Other Clothing and Equipment
Safety glasses are recommended.	NA .

#### IV. EMERGENCY MEDICAL PROCEDURES

- 1. Skin: Wash with soap and water.
- 2. Eyes: Irrigate immediately with plenty of water. Obtain

medical attention if necessary.

# V. HEALTH/SAFETY INFORMATION

Health	Inhalation Ingestion Skin	duce significant disease or toxic effect when exposures are kept under the TLV or PEL. NA							
	Eyes Threshold Limit	May cause skin irritation on prolonged or repeated contact.  May irritate or injure eyes.  Limit Value See Section I							
Fire and Explosion	Flash Point Not Flam Unusual Fire an	PF NA nmable od Explosion Hazards NA	Auto Ignition Temperature	°F	Flammable Lower Upper	Limits in NA NA	% %	Extinguishing Media  NA guishing Media Not to be Used  NA	
Reactivity	Stability  Stable	Unstable	Incompatibility (Materials to NA	Avoid)					
	Conditions to A	VOID	NA_						
	Hazardous Dec	composition Products	NA						

# VI. ENVIRONMENTAL

ill or leak procedures

We recommend that the purchaser establish a spill prevention, control and counter measure plan. This plan should include procedures for proper storage as well as clean-up of spills or leaks. The procedures should conform to safe practices and provide for proper recovery or disposal. Depending on the quantity spilled, notification of the National Response Center (800-424-8802) may be required in case of hazardous substances. (See EPA and DOT regulations; also various state and local regulations.)

Waste Disposal Method\*

Used or unused product should be tested to determine hazard status and disposal requirements under federal, State or local laws and regulations.

\*Disposer must comply with Federal, State and Local disposal or discharge laws.

#### VIII ADDITIONAL INFORMATION

- 1. Do not breathe dust.
- 2. Toxic risk may be altered by chemical or physical changes caused by conditions of use.
- 3. Purotab is a refractory castable.

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

# MATERIAL SAFETY DATA PYDRAUL® 29E Fire Resistant Hydraulic Fluid

MONSANTO PRODUCT NAME
PYDRAUL® 29E
FIRE RESISTANT HYDRAULIC FLUID

MONSANTO COMPANY 800 N. LINDBERGH BLVD. ST. LOUIS, MO 63167

Emergency Phone No. (Call Collect) 314-694-1000

#### PRODUCT IDENTIFICATION

PYDRAUL® 29E fire resistant hydraulic fluid is a proprietary product and has no CAS number. Its composition is a trade secret of Monsanto Company. All components of PYDRAUL 29E appear on the Inventory of Chemical Substances published by the U.S. Environmental Protection Agency under the authority of the Toxic Substance Control Act (TSCA).

Chemical Family:

Phosphate esters with performance additives.

Synonym(s):

Mixture of

2-Ethylhexyldiphenyl phosphate ester blend containing:

2-ethylhexyldiphenyl phosphate (CAS Reg. No. 1241-94-7) di-2-ethylhexylphenyl phosphate (CAS REg. No. 16368-97-1)

triphenyl phosphate (CAS REg. No. 115-86-6);

p-t-Butylphenyl diphenyl phosphate ester blend containing:

p-t-butylphenyl diphenyl phosphate (CAS Reg. No. 56803-37-3)

triphenyl phosphate (CAS Reg. No. 115-86-6);

Di(C<sub>7-9-11</sub>-alkyl)phthalate blend;

and performance additives.

DOT Hazard Class:

This product is not classified as a hazardous material by the

U.S. Department of Transportation.

Label Requirements:

Product label

Reportable Quantity (RQ)
Under U.S. EPA CERCLA

Regulations:

Not listed.

U.S. Surface Freight

Classification:

Hydraulic system fluid, other than petroleum.

Hazardous Chemical(s) Under OSHA Hazard

Communiation Standard:

This product contains, as components, the substances listed below which are identified as hazardous chemicals under the criteria of the

OSHA Hazard Communication Standard (29 CFR 1910.1200):

2-Ethylhexyldiphenyl Phosphate Ester Blend,

CAS Reg. No. Not Available

Triphenyl Phosphate, CAS Reg. No. 115-86-6

#### WARNING STATEMENTS

CAUTION!

MAY CAUSE IRRITATION TO EYES AND SKIN
ELEVATED PROCESSING TEMPERATURES MAY CAUSE RELEASE OF TOXIC VAPORS WHICH
ARE HARMFUL IF INHALED

#### PRECAUTIONARY MEASURES

Avoid contact with eyes, skin, and clothing.

Avoid breathing vapors.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Note: This product may be toxic to fish. It should not be dumped, spilled, rinsed or washed into sewers or public waterways.

Dispose of containers in a secure landfill. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is destroyed. DO NOT REUSE THIS CONTAINER.

#### **EMERGENCY AND FIRST AID PROCEDURES**

FIRST AID: IF IN EYES, immediately flush with plenty of water. Call a physician if irritation persists.

IF ON SKIN, immediately flush with plenty of water. Wash clothing before reuse.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

#### OCCUPATIONAL CONTROL PROCEDURES

PYDRAUL 29E fire resistant hydraulic fluid does not present significant eye Eye Protection:

irritation or eye toxicity requiring special protection. Avoid eye contact as good

industrial practice.

Skin Protection: Wear appropriate protective gloves that provide a barrier and protective cloth-

> ing to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application. Wear a face shield and an apron that provides a barrier when splashing is likely. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse.

Wash thoroughly after handling.

Respiratory

Protection: Avoid breathing vapor or mist. Use NIOSH/MSHA approved equipment when

> airborne exposure limits are exceeded. Consult respirator manufacturer to determine appropriate type equipment for given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be

in compliance with 29 CFR 1910.134.

Ventilation: Provide ventilation to control exposure levels below airborne exposure limits.

Use local mechanical exhaust ventilation at sources of air contamination such

as open process equipment.

Airborne

Exposure Limits: Product: PYDRAUL 29E Fire Resistant Hydraulic Fluid

> OSHA PEL: None Established ACGIH TLV†: None Established

2-Ethylhexyldiphenyl Phosphate

OSHA PEL: None Established ACGIH TLV: None Established

(Health Effects Summary Continued On The Next Page)

## **HEALTH EFFECTS SUMMARY (Continued)**

Airborne

Exposure Limits (Continued):

Di(C<sub>7</sub>,9,11-alkyl) phthalate blend

Although OSHA and ACGIH have not established specific exposure limits for this material, they have established limits for several dialkyl phthalate esters:

For dimethyl-, dibutyl-, and di-2-ethylhexyl-phthalates:

OSHA PEL: 5 mg/m³ 8-hour time-weighted average

For dimethyl-, diethyl-, dibutyl- and di-2-ethylhexyl-phthalates:

ACGIH TLV: 5 mg/m³ 8-hour time-weighted average

10 mg/m³ short-term exposure limit

Monsanto has adopted a general guideline that exposure to phthalate esters should be kept below 5 mg/m³ 8-hour time-weighted average.

p-t-Butylphenyl diphenyl phosphate ester blend

OSHA PEL: None Established ACGIH TLV: None Established

Triphenyl Phosphate

OSHA PEL: 3 mg/m³ 8-hour time-weighted average ACGIH TLV: 3 mg/m³ 8-hour time-weighted average ACGIH TLV: 6 mg/m³ short-term exposure limit

#### FIRE PROTECTION INFORMATION

Flash Point:

455°F

Method:

Cleveland Open Cup

Auto Ignition

Temperature:

900°F

Method:

**ASTM D-2155** 

Extinguishing Media:

Water spray, foam, dry chemical, carbon dioxide or any Class B extinguish-

ing agent.

Special Firefighting

Procedures:

Firefighters or others exposed to products of combustion should wear full protective clothing including self-contained breathing apparatus. Equipment

should be thoroughly decontaminated after use.

Unusual Fire and

Explosion Hazards:

Products of decomposition include hazardous carbon monoxide, carbon di-

oxide, and oxides of phosphorus.

#### REACTIVITY DATA

Stability:

Maximum bulk temperature in continuous use should be limited to 175°F (79°C). Higher temperature will cause increasing decomposition, especially when air and moisture are present. Decomposition is not expected to be sudden or violent.

Materials to Avoid:

Exposure to materials which are highly oxidizing should be avoided.

Hazardous Decomposition

Products:

Oxides of phosphorus, carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO),

smoke, soot, and low molecular weight hydrocarbons.

Hazardous Polymerization:

Does not occur.

#### **HEALTH EFFECTS SUMMARY**

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of PYDRAUL 29E hydraulic fluid on the health of industrially exposed individuals and to support the Precautionary Statements and Occupational Control Procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

#### Human Experience

Dermal contact and inhalation are expected to be the primary routes of occupational exposure to PYDRAUL 29E hydraulic fluid. Repeated or prolonged contact with this material has been reported to cause dermal irritation. While studies in animals have demonstrated that one of the components of this material may cause inhibition of cholinesterase following dermal exposure, PYDRAUL 29E is not expected to present a significant health risk to employees if recommended safety precautions are followed. However, at elevated processing temperatures, the 2-ethylhexyldiphenyl phosphate ester blend component may produce a vapor that is toxic if inhaled.

#### Toxicological Data

Data from Monsanto studies indicate the following:

Oral LD<sub>50</sub> (Rat): 10,000 mg/kg, Practically Nontoxic

Dermal LD<sub>50</sub> (Rabbit): Greater than 7,940 mg/kg, Practically Nontoxic Eye Irritation (Rabbit): (FHSA) 2.2 on a scale of 110.0, Slightly Irritating Skin Irritation (Rabbit): (FHSA) 2.7 on a scale of 8.0, Slightly Irritating

Vapor Inhalation (Rat): Rats were exposed to a stream of air which passed through PYDRAUL 29E

hydraulic fluid and led directly into the experimental chamber. Due to its low volatility, there was essentially no vaporization of the test material and the animals survived both the 6-hour exposure and subsequent 10-day observation periods

without observable effects.

#### Components

Data from studies conducted by Monsanto on the components of PYDRAUL 29E hydraulic fluid indicate the following:

#### 2-Ethylhexyldiphenyl Phosphate Ester Blend

Acute Vapor Inhalation (Rat): 3 of 5 rats died during a 10 day observation period following a 6 hour

exposure to a nominal concentration of 3.0 mg 2-ethylhexyldiphenyl phosphate ester blend/liter of air. Significant weight loss was observed in the survivors. The sample concentrations were generated by passing air through a sample of phosphate ester blend heated to

163°C.

Aerosol Inhalation (Rat):

No mortalities occurred in ten rats exposed to the 2-ethylhexyldiphenyl phosphate ester blend at a concentration (analytical) of 4.8 mg/l of air for 4 hours. Eye and respiratory irritation were observed in exposed animals. The sample was prepared as an aerosol heated to 125°C.

A repeat insult patch test on 200 human volunteers produced 30 primary irritation responses after a single application of the 2-ethylhexyldiphenyl phosphate ester blend. A second 48-hour application, 15 days after the initial application, produced similar irritation in 29 subjects. This material is considered a primary irritant but not a sensitizing agent.

A neurotoxicity study was conducted with the 2-ethylhexyldiphenyl phosphate ester blend in chickens. Adult hens were given oral doses of 10 g/kg for 3 consecutive days. This dosing regimen was repeated 21 days later for a total dose of 120 g/kg. No gross signs of neurological effects and no microscopic evidence of demyelination in brain, spinal cord or sciatic nerve were observed.

# Monsanto MATERIAL SAFETY DATA

#### **HEALTH EFFECTS SUMMARY (Continued)**

#### 2-Ethylhexyldiphenyl Phosphate Ester Blend (Continued)

The 2-ethylhexyldiphenyl phosphate ester blend was evaluated for mutagenic potential in the following systems: microbial assays using five *Salmonella* strains and one strain of *Saccharomyces* yeast; *in vitro* induction of L5178Y TK mouse lymphoma cell point mutations; and *in vivo* induction of rat bone marrow cell clastogenesis. No evidence of mutagenicity was observed in any of these assays.

No teratogenic or fetotoxic effects were observed in the offspring of rats administered the 2-ethyl-hexyldiphenyl phosphate ester blend, by gavage, at a dose of 300, 1000 or 3000 mg/kg/day on days 6 through 15 of gestation. Maternal toxicity, as evidenced by reduced body weight gain, was noted in the mid- and high-dose groups.

#### p-t-Butylphenyl Diphenyl Phosphate Ester Blend

The p-t-butylphenyl diphenyl phosphate ester blend component of PYDRAUL 29E hydraulic fluid was applied to the intact and abraded skin of rabbits at doses of 10, 100 or 1000 mg/kg/day for 6 hours/day, 5 days/week for 3 weeks. Irritation of the skin at the site of application was apparent at all dose levels tested. Significant reductions in brain and erythrocyte cholinesterase activity were observed in high- and mid-dose animals. Plasma cholinesterase activity was significantly reduced in high- and mid-dose females. No treatment-related gross or microscopic pathologic changes were observed.

A neurotoxicity study was conducted with the p-t-butylphenyl diphenyl phosphate ester blend in chickens. Oral doses of 10 g/kg were given twice daily for 3 days. The same dosing regimen was repeated 21 days later for a total dose of 120 g/kg. No gross signs of neurological effects and no microscopic evidence of demyelination were observed.

In a 30-day feeding study, rats were fed p-t-butylphenyl diphenyl phosphate ester blend at doses of 250, 500, 750, 1000 and 2000 mg/kg/day. Reduced body weights were observed in high-dose females and in males given p-t-butylphenyl diphenyl phosphate ester blend at a dose of 750 mg/kg or higher. Hepatic enlargement and discolored livers were noted in all treatment groups in a dose-related fashion.

The p-t-butylphenyl diphenyl phosphate ester blend was evaluated in a 90 day toxicity study using rats given dietary concentrations of the test material at 0, 100, 3000 or 1000 ppm. No treatment-related deaths were observed. The hematological, urinalysis, and chemical chemistry studies which included cholinesterase activity levels showed no significant difference between the test and control animals. Gross pathological and histological evaluation of the tissues from the treated animals revealed no apparent treatment-related effects.

Rats were exposed by inhalation to the p-t-butylphenyl diphenyl phosphate ester blend at concentrations of 10.1 or 101.1 mg/m³, 6 hours/day, 5 days/week for 3 months. Intermittent rhinitis, sneezing, hemorrhagic conjunctivitis and wheezing were observed in high-dose males and females; increased liver-to-body weight ratios were observed in high-dose males. No adverse hematologic, biochemical, urinalysis or histopathologic effects were noted.

The p-t-butylphenyl diphenyl phosphate ester blend was evaluated for mutagenic potential in the L5178Y TK mouse lymphoma assay and in microbial assays using five Salmonella strains and one strain of Saccharomyces yeast. These assays were conducted with and without mammalian microsomal activation. No mutagenic response was observed.

No teratogenic or fetotoxic effects were observed in the offspring of rats administered the p-t-butyl-phenyl diphenyl phosphate ester blend, by gavage, at a dose of 300, 1000 or 3000 mg/kg/day on days 6 through 19 of gestation. Signs of maternal toxicity, as evidenced by a slight decrease in mean maternal body weight, were observed in the high-dose groups.

#### **HEALTH EFFECTS SUMMARY (Continued)**

 $Di(C_{7-9-11}$ -Alkyl)Phthalate Blend

In a four week feeding study, rats were given  $di(C_{7-9-11}-alkyl)$  phthalate blend at concentrations of 250, 500, 750, 1000 and 2000 mg/kg/day in the diet. Discolored livers were observed in male rats from the three highest dosage groups. The no-effect level was considered to be 500 mg/kg/day for the male rats. There were no adverse effects observed in the female rats at any treatment level.

The di( $C_{7-9-11}$ -alkyl)phthalate blend was tested in a 90-day subacute oral toxicity study. Rats were fed 0, 1000, 3000, or 10000 ppm of the blend in their diets. An elevation in blood alkaline phosphatase and degenerative changes in livers of high-dose male rats were observed. High-dose females exhibited increased liver and kidney weights. The no-effect level is considered to be 3000 ppm.

In a 2 year chronic toxicity study,  $di(C_{7-9-11}-alkyl)$  phthalate blend was administered orally to rats at concentrations of 0, 300, 1000 and 3000 ppm (mean dosage levels of 0, 16, 54 and 161 mg/kg/day) in the diet for 28 months. Body weight increases and minor changes in clinical chemistry parameters were observed in both male and female rats. An increased incidence of neoplastic lesions was seen in both male and female animals at all dose levels. These were judged to be of no significance since the observed incidences and distributions were consistent with the normal biological variations observed in other studies with this strain of rat. However, data subsequently available from carcinogenicity studies on structurally-related compounds with this strain of rat indicated consistently increased incidences of mononuclear cell (large granular lymphocyte) leukemia. Moreover, the incidence with  $di(C_{7-9-11}$ -Alkyl)phthalate blend was similar to that seen with the other compounds. Consequently, it was concluded that there may be an association between this lesion and exposure to  $di(C_{7-9-11}-Alkyl)$  phthalate blend. Although the incidence of this finding in treated animals was increased about 50% over controls, no dose-response was evident; the incidence of leukemia was similar for males and females in all treated groups.

A six month aerosol inhalation study was conducted with  $di(C_{7-9-11}-alkyl)$  phthalate blend using monkeys, rats and guinea pigs. Animals were exposed to 0, 6.5, or 22.0 mg di( $C_{7-9-11}$ -alkyl)phthalate blend/m³ of air, 6 hours per day, 5 days per week. No treatment-related effects were observed in monkeys or guinea pigs. Rats in the high exposure group exhibited significant increases in liver, kidney, pituitary, spleen and gonad weights. In monkeys and guinea pigs, the highest no-effect level is 22.0 mg/m³. For rats, the highest no-effect level is 6.5 mg/m³.

The  $di(C_{7-9-11}-alkyl)$  phthalate blend did not cause a mutagenic response in microbial assays with five Salmonella strains and one strain of Saccharomyces yeast, with and without microsomal activation, or in L5178Y TK mouse lymphoma cells in the presence of a metabolic activation system. An inconsistent, nonreproducible positive response was observed in the L5178Y TK mouse lymphoma cells in the absence of metabolic activation.

A teratogenicity study was conducted in rats on  $di(C_{7-9-11}-alkyl)$  phthalate blend. This material was orally administered to female rats at dosages of 0, 250, 1000 and 5000 mg/kg/day on days 6-19 of gestation. No evidence of maternal toxicity or teratogenicity was observed. Evidence of fetal toxicity was demonstrated by a decrease in mean fetal body weight in the high dosage group. The no effect level is considered to be 1000 mg/kg/day.

The phosphate ester blends discussed above contain triphenyl phosphate. Additional toxicity information is available for this component.

(Health Effects Summary Continued On The Next Page)

# Monsanto material safety data

### **HEALTH EFFECTS SUMMARY (Continued)**

#### Triphenyl Phosphate

A neurotoxicity study was conducted with triphenyl phosphate in chickens. Oral doses of 5 g/kg were given twice daily for 3 consecutive days. The same dosing regimen was repeated 21 days later for a total dose of 60 g/kg. No gross signs of neurological effects and no treatment-related microscopic evidence of demyelination were observed.

A limited neurotoxicity study was conducted with triphenyl phosphate in cats. No evidence of axonal degeneration or demyelination in the spinal cord was reported following subcutaneous injections of 0.4, 0.7 or 1.0 g/kg.

In a preliminary short term screening assay, triphenyl phosphate was reported to induce no morphological alterations of nerve fibers, glial cells or neurons in isolated cultured sympathetic dorsal root ganglia from 10 to 11 day old chick embryos.

Triphenyl phosphate was applied to the intact and abraded skin of rabbits at dosages of 100 or 1000 mg/kg/day for 6 hours/day, 5 days/wk for 3 wks. Significant reductions in brain, and erythrocyte cholinesterase activity were observed in the high-dose animals. Plasma cholinesterase activity was significantly reduced in the high-dose females. No treatment-related gross or microscopic pathological changes were observed.

Rats were administered triphenyl phosphate at dietary concentrations of 0.1 and 0.5 percent for 35 days. A slight decrease in growth rate and increased liver weights were reported in the high dose group. No treatment-related hematologic or gross abnormalities were reported.

Triphenyl phosphate was injected intraperitoneally into strain A mice in total doses of 80 to 360 mg/kg over a 1 day to 6 week period. Twenty-four weeks after the initial injection, the animals were sacrificed and examined for the presence of lung tumors. Triphenyl phosphate did not increase the incidence of pulmonary tumors.

Triphenyl phosphate was evaluated for mutagenic potential in the L5178Y TK mouse lymphoma mutation assay and in a microbial mutagenicity assay using five *Salmonella* strains and one strain of *Saccharomyces* yeast. These assays were conducted with and without mammalian microsomal activation. No mutagenic effects were observed.

#### Additional Information

A Threshold Limit Value (TLV) has been established by the American Conference of Governmental Industrial Hygienists for triphenyl phosphate, a component of PYDRAUL 29E. For further information on this material, please refer to the current edition of the *Documentation of Threshold Limit Values*.

#### PHYSICAL DATA

Appearance: Clear to slightly hazy blue liquid

**Specific Gravity (25/25°C):** 1.090 - 1.110

Viscosity @ 100°F (38°C): 29 - 34 centistokes

**Pour Point:**  $-40^{\circ}\text{F} (-40^{\circ}\text{C})$ 

**Bolling Point** @ **760 mm Hg:** 500°F (260°C)

Vapor Pressure @ 200°F (93°C): 0.002 mm Hg

Vapor Density (Air = 1): Greater than 1

Solubility in Water: Practically insoluble

**Note:** These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

#### SPILL, LEAK & DISPOSAL INFORMATION

Emergency Spill and

Leak Information:

Spill, should be confined and absorbed on a suitable medium such as sawdust,

clay, or filtercel and disposed of as recommended below.

Disposal Information: Waste product should be incinerated. Absorbed spills or leaks should be incinerated or disposed of in a hazardous waste landfil which complies with local,

state, and federal regulations.

This material, should not be dumped, spilled, rinsed, or washed into sewers or

public waterways.

#### ADDITIONAL COMMENTS

Refer to Monsanto Technical Bulletin IC/FP-3 for information on reclaiming PYDRAUL 29E hydraulic fluid.

This product should not contact or in any way contaminate food, animal feed, food or feed products, food or feed chemicals, food or feed packaging materials, pharmaceuticals or any items which may directly or indirectly be ultimately ingested by humans, animals, wildlife or aquatic life. Any such substance contaminated with this product should be destroyed.

PYDRAUL 29E is approved by Factory Mutual as a fire resistant hydraulic fluid.

**Environmental Toxicity Information:** 

#### **PYDRAUL 29E**

48-hr LC<sub>50</sub> Daphnia magna: 0.32 mg/l, Highly Toxic 96-hr LC<sub>50</sub> Fathead minnow: 0.6 mg/l, Highly Toxic 96-hr LC<sub>50</sub> Rainbow trout: 1.4 mg/l, Moderately Toxic 96-hr LC<sub>50</sub> Bluegill sunfish: 1.5 mg/l, Moderately Toxic

#### 2-Ethylhexyldiphenyl Phosphate Ester Blend

48-hr LC<sub>50</sub> Midge larvae: 0.5 mg/l, Highly Toxic

96-hr EC<sub>50</sub> Algae: 0.2 mg/l, Highly Toxic

Daphnia magna were exposed to the 2-ethylhexyldiphenyl phosphate ester blend component of PY-DRAUL 29E at concentrations of 6, 12, 18, 43 and 75 µg/l through one generation (21 days). All Daphnia exposed to the highest test concentration died. Reduced reproduction was observed at concentrations of 43 µg/l and higher. The maximum acceptable toxicant concentration was considered to be between 18 and 43 µg/l.

Rainbow trout eggs and fry were exposed to 2-ethylhexyldiphenyl phosphate ester blend concentrations of 21, 51, 93, 192 and 345 μg/l. No treatment-related effects were observed on egg hatchability, behavior, backbone curvature or growth of the fry. Survival was reduced at a concentration of 51 µg/l or higher. The maximum acceptable toxicant concentration was considered to be between 21 and 51 µg/l.

The 2-ethylhexyldiphenyl phosphate ester blend was evaluated in a series of aquatic studies to determine its half-life and biodegradability. This material had a half-life of 1 to 5 days and its biodegradability was classed as intermediate to readily degraded.

The bioconcentration potential of the 2-ethylhexyldiphenyl phosphate ester blend in bluegill was measured over a 36-day period. It was determined that this blend has a low potential to bioaccumulate in fish.

(Additional Comments Continued On The Next Page)

#### **ADDITIONAL COMMENTS (Continued)**

#### p-t-Butylphenyl Diphenyl Phosphate Ester Blend

48-hr  $LC_{50}$  Midge larvae: 1.9 mg/l, Moderately Toxic 96-hr  $EC_{50}$  Algae: 2.6 - 3.0 mg/l, Moderately Toxic 96-hr  $LC_{50}$  Mysid shrimp: 2.5 mg/l, Moderately Toxic

96-hr LC<sub>50</sub> Sheepshead minnow: 3.0 mg/l, Moderately Toxic

Daphnia magna were exposed to the p-t-butylphenyl diphenyl phosphate ester blend concentrations of 5.1 to 100 mg/l through one generation (21 days). Survival and reproduction of Daphnia were reduced at 100 mg/l. The maximum acceptable toxicant concentration was considered to be between 40 and 100 mg/l.

Fathead minnow eggs and fry were exposed to p-t-butylphenyl diphenyl phosphate ester blend concentrations of 0.125, 0.25, 0.5, 1.0 and 2.0 mg/l. No treatment-related effects were observed on hatchability of the eggs. Fry survival was reduced at a concentration of 1.0 mg/l and higher. Fry weight and length were reduced at a concentration of 0.5 mg/l and higher. The maximum acceptable toxicant concentration was considered to be between 0.25 and 0.5 mg/l.

The p-t-butylphenyl diphenyl phosphate ester blend was evaluated in a 24-hour microbial semi-continuous activated sludge test. The primary degradation was 51%; biodegradability was classified as intermediate. A river die-away test was conducted on this material. This material was exposed to natural microorganisms in replicate water samples. The predicted environmental half-life of the p-t-butylphenyl diphenyl phosphate ester blend based upon this study was two days.

The bioconcentration potential of the p-t-butylphenyl diphenyl phosphate ester blend in bluegill was measured over a 26-day period. It was determined that this blend has a moderate potential to bioaccumulate in fish.

#### $Di(C_{7-9-11}$ -Alkyi)Phthalate Blend

48-hr LC<sub>50</sub> Midge larvae: Greater than 10 mg/l, Slightly Toxic

96-hr EC<sub>50</sub> Marine algae: Greater than 1,000 mg/l, Practically Nontoxic

96-hr EC<sub>50</sub> Freshwater algae: Greater than 1,000 mg/l, Practically Nontoxic

96-hr LC<sub>50</sub> Mysid shrimp: Greater than 1,000 mg/l, Practically Nontoxic

96-hr LC<sub>50</sub> Sheepshead minnow: Greater than 1,000 mg/l, Practically Nontoxic

Fathead minnow eggs and fry were exposed to the  $di(C_{7-9-11}$ -alkyl)phthalate blend component of PYDRAUL 29E hydraulic fluid at concentrations of 22, 44, 78, 154 and 256  $\mu$ g/l. No treatment-related effects were observed on viability and hatchability of eggs or survival, weight and length of the fry. The no-significant toxic effect level was 256  $\mu$ g/l.

The di( $C_{7-9-11}$ -alkyl)phthalate blend component was evaluated in a series of aquatic studies to determine its biodegradability. This component had a half-life of 5 to 8 days and its biodegradability was classified as intermediate.

The bioconcentration potential of the  $di(C_{7-9-11}-alkyl)$ phthalate blend in bluegill was measured over a 22-day period. The bioconcentration potential of this blend was considered to be negligible.

(Additional Comments Continued On The Next Page)

#### **ADDITIONAL COMMENTS (Continued)**

#### Triphenyl Phosphate

48-hr LC<sub>50</sub> Daphnia magna: 1.0 mg/l, Highly Toxic 48-hr LC<sub>50</sub> Midge larvae: 1.6 mg/l, Moderately Toxic 96-hr LC<sub>50</sub> Rainbow trout: 0.32 ppm, Highly Toxic 96-hr LC<sub>50</sub> Bluegill sunfish: 3.16 ppm, Moderately Toxic

96-hr LC<sub>50</sub> Algae: 2 mg/l, Moderately Toxic

96-hr LC<sub>50</sub> Sheepshead minnows: Estimated to be between 0.32 and 0.56 mg/l, Highly Toxic

96-hr LC<sub>50</sub> Fathead minnows: 0.66 ppm, Highly Toxic

96-hr LC<sub>50</sub> Mysid shrimp: Estimated to be between 0.18 and 0.32 mg/l, Highly Toxic

Fathead minnow eggs were exposed to Triphenyl phosphate concentrations of 2.8, 12, 36, 87 and 230 µg/l. No treatment-related effects were observed in hatchability of eggs or on weight and length of the fry. Fry survival was reduced at 230 µg/l. The maximum acceptable toxicant concentration is considered to be between 87 and 230 µg/l.

Triphenyl phosphate was evaluated in a series of aquatic studies to determine its half-life and biodegradability. Triphenyl phosphate had a half-life of 2 to 4 days and it was classed as readily biodegradable.

The bioconcentration potential of the Triphenyl phosphate was measured over a 26 day period. It was determined that Triphenyl phosphate has a low potential to bioaccumulate in fish.

**DATE: 4/18/86** 

MSDS NO.: M00006619

SUPERSEDES: 9/19/84

#### FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

MSDS Coordinator Specialty Chemicals Monsanto Chemical Company (314) 694-1000 (A Unit of Monsanto Company)

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CARPENTER TECHNOLOGY CORPORATION

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MATERIAL
SAFETY
DATA SHEET

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OF CERRO CORP

L 62202

CERRO COPPER PRODUCTO COMPANA MSD5 NUMBER - COFF-00-0207 LAFROMALE: (FRIGE) ENGIRENTAL: (FRIGE) ENGIRASING: (FRIGE)

MATERIAL OR DATA HEREIN IS MADE HEREUNDER.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT THE HEALTH AND SAFETY DEPARTMENT AT: 215-371-2000.

#### **SECTION I - PRODUCT IDENTIFICATION**

PRODUCT DESCRIPTION:

PYROTOOL 7 TOOL STEEL HOLLOW BAR - DOUBLE AGED

PINK PAINT

SECTION II - HAZARDOUS INGREDIENTS						
INGREDIENTS	%	PEL / TLV 8 HOUR TWA UNLESS OTHERWISE NOTED				
NICKEL 7440-02-0 IRON * 1309-37-1 CHROMIUM 7440-47-3 TANTALUM 7440-25-7 MOLYBDENUM 7439-98-7 TITANIUM * 63-67-7 L JALT 7440-48-4	19.00 5.00 3.00	TLV 1.0 MG/M3 PEL 10.0 MG/M3 TLV 5.0 MG/M3 PEL 1.0 MG/M3 PEL 1.0 MG/M3 PEL 5.0 MG/M3 PEL 5.0 MG/M3 PEL 5.0 MG/M3 TLV 5.0 MG/M3 TLV 10.0 MG/M3 (INSOLUBLE COMPOUNDS) TLV 10.0 MG/M3 (INSOLUBLE COMPOUNDS) PEL 15.0 MG/M3 TLV 10.0 MG/M3				
		+ - THESE SUBSTANCES ARE REGULATED IN THEIR OXIDE FORM				

THE ABOVE PERCENT CONCENTRATIONS ARE CONSIDERED NOMINAL AND ARE PROVIDED FOR INDUSTRIAL HYGIENE PURPOSES.

THEY DO NOT REPRESENT A CERTIFICATION OF CONTENT.

#### **SECTION III - PHYSICAL DATA**

BOILING PT.: HIGH MELTING PT.: 2400 to 2800 F SPECIFIC GRAVITY: 7.5 to 8.5 VAPOR PRESSURE: NIL VAPOR DENSITY: NIL
SOLUBILITY IN WATER: INSOLUBLE
APPEARANCE AND ODOR: SOLID,
ODORLESS METAL

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

UNLESS OTHERWISE NOTED, NONE. PRODUCT IS A SOLID METAL. NOTES:

#### **SECTION V - HEALTH HAZARD DATA**

SPECIALTY STEEL ALLOYS ARE GENERALLY NOT CONSIDERED HAZARDOUS IN THE FORM SHIPPED (SOLID BARS, BILLETS, RODS, WIRE, ETC.). HOWEVER, IF YOUR PROCESS INVOLVES GRINDING, MELTING, WELDING, CUTTING, OR ANY OTHER PROCESS THAT CAUSES A RELEASE OF DUST OR FUME, HAZARDOUS LEVELS OF DUST OR FUME OF THE CONSTITUENTS OF THESE ALLOYS COULD BE GENERATED. THE FOLLOWING IS A LIST OF POTENTIAL HEALTH EFFECTS FOR ALL HAZARDOUS ELEMENTS THAT ARE POSSIBLY CONTAINED IN ANY OF OUR ALLOYS. PLEASE REFER TO SECTION II TITLED "HAZARDOUS INGREDIENTS" FOR A LIST OF THOSE SPECIFIC ELEMENTS CONTAINED IN THIS PARTICULAR ALLOY.

#### **HEALTH EFFECTS:**

- \*ALUMINUM: METAL DUST AND OXIDE IS GENERALLY CONSIDERED A "NUISANCE" PARTICULATE. MAY CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN EXCESSIVE CONCENTRATIONS.
- \*BERYLLIUM: CAN CAUSE DERMATITIS, ALSO CAUSES A SEVERE CHRONIC LUNG DISEASE KNOWN AS "CHRONIC BERYLLIUM DISEASE" WHICH IS OFTEN TAL.
- \_\_\_\_AON OXIDE: HAS CAUSED IRRITATION OF THE EYES, NOSE, AND SKIN OF EXPERIMENTAL ANIMALS. IT MAY HAVE THE SAME EFFECT ON HUMANS. CHROMIUM: FERROCHROME ALLOYS HAVE BEEN ASSOCIATED WITH LUNG CHANGES IN WORKERS EXPOSED TO THESE ALLOYS.

COBALT: FUME OR DUST CAUSES IRRITATION OF THE NOSE AND THROAT AND MAY CAUSE AN ALLERGIC SKIN RASH. ALSO HAS BEEN REPORTED TO CAUSE RESPIRATORY DISEASE WITH SYMPTOMS RANGING FROM COUGH AND SHORTNESS OF BREATH TO PERMANENT DISABILITY AND DEATH. THE SYMPTOMS FREQUENTLY GO AWAY WHEN EXPOSURE HAS STOPPED, BUT SOMETIMES THE SYMPTOMS PROGRESS AFTER EXPOSURE HAS CEASED.

COPPER: FUME OR DUST CAUSES IRRITATION OF THE EYES, NOSE, AND THROAT AND A FLU-LIKE ILLNESS CALLED METAL FUME FEVER. SYMPTOMS INCLUDE FEVER, MUSCLE ACHES, NAUSEA, CHILLS, DRY THROAT, COUGH, WEAKNESS, AND SWEET OR METALLIC TASTE IN THE MOUTH.

#### SECTION V - HEALTH HAZARD DATA (CONTINUED)

HAFNIUM: HAFNIUM SALTS HAVE CAUSED IRRITATION OF THE EYES AND SKIN IN EXPERIMENTAL ANIMALS. OTHER HAFNIUM COMPOUNDS HAVE CAUSED LIVER DAMAGE IN ANIMALS ON PROLONGED FEEDING.

IRON OXIDE: REPEATED EXPOSURE TO IRON OXIDE FUME OVER A PERIOD OF YEARS MAY CAUSE X-RAY CHANGES OF THE LUNGS, BUT DOES NOT CAUSE T EXPOSED PERSON TO BECOME ILL.

MANGANESE: INHALATION OF MANGANESE FUME MAY CAUSE "METAL FUME FEVER" WITH SYMPTOMS OF CHILLS, FEVER, NAUSEA, COUGH, DRY THROAT, WEAKNESS, MUSCLE ACHES, AND A SWEET OR METALLIC TASTE IN THE MOUTH. PROLONGED OR REPEATED EXPOSURE MAY AFFECT THE NERVOUS SYSTEM, WITH DIFFICULTY IN WALKING AND BALANCING, WEAKNESS OR CRAMPS IN THE LEGS, HOARSENESS OF THE VOICE, TROUBLE WITH MEMORY OR JUDGEMENT, UNSTABLE EMOTIONS OR UNUSUAL IRRITABILITY. THE RESPIRATORY SYSTEM MAY ALSO BE AFFECTED BY A PNEUMONIA LIKE ILLNESS WITH SYMPTOMS OF COUGHING, FEVER, CHILLS, BODY ACHE, CHEST PAIN AND OTHER COMMON SIGNS OF PNEUMONIA.

MOLYBDENUM: OXIDES OF MOLYBDENUM HAVE CAUSED IRRITATION OF THE EYES, NOSE, AND THROAT, WEIGHT LOSS, AND DIGESTIVE DISTURBANCES IN EXPERIMENTAL ANIMALS.

NICKEL: FUMES ARE RESPIRATORY IRRITANTS AND MAY CAUSE RESPIRATORY DISEASE. SKIN CONTACT CAN ALSO CAUSE AN ALLERGIC SKIN RASH. NICKEL AND ITS COMPOUNDS HAVE BEEN REPORTED TO CAUSE CANCER OF THE LUNGS AND SINUSES.

TANTALUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY BUT HAS PRODUCED TRANSIENT LESIONS OF THE LUNGS IN EXPERIMENTAL ANIMALS.

TIN: GENERALLY CONSIDERED TO EXHIBIT A LOW ORDER OF TOXICITY, MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT AND SKIN.

TITANIUM DIOXIDE: CONSIDERED TO BE A "NUISANCE" PARTICULATE. CAN CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN HIGH CONCENTRATIONS. SLIGHT LUNG CHANGES MAY OCCUR.

\*TUNGSTEN: METAL AND INSOLUBLE COMPOUNDS ARE GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY, BUT HAVE PRODUCED LUNG CHANGES IN EXPERIMENTAL ANIMALS.

VANADIUM PENTOXIDE: DUST AND FUME MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT, AND RESPIRATORY TRACT. IT MAY ALSO CAUSE BRONCHITIS WITH WHEEZING AND CHEST PAIN. A GREENISH DISCOLORATION OF THE TONGUE MAY OCCUR. AFTER SYMPTOMS HAVE OCCURRED FOLLOWING INITIAL EXPOSURE, REPEATED EXPOSURE MAY CAUSE MORE SEVERE SYMPTOMS OF THE SAME NATURE. REPEATED EXPOSURES MAY CAUSE CHRONIC BRONCHITIS, OR ALLERGIC SKIN RASH.

ZIRCONIUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY. SKIN RASH HAS BEEN REPORTED FROM EXPOSURE TO ZIRCONIUM CONTAINING DEODORANTS.

REFERENCES: HEALTH HAZARD DATA FOR THE ELEMENTS MARKED WITH AN (\*) WAS TAKEN FROM ACGIH'S <u>DOCUMENTATION OF TLV'S</u>. HEALTH HAZARD DATA FOR THE REMAINING ELEMENTS WAS TAKEN FROM THE NIOSH / OSHA <u>OCCUPATIONAL</u> HEALTH <u>GUIDELINES FOR CHEMICAL HAZARDS</u>. FOR ADDITIONAL SOURCES OF INFORMATION ON POTENTIAL HEALTH EFFECTS OF THESE SUBSTANCES, PLEASE REFER TO OSHA'S HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) APPENDIX C.

CARCINOGENIC REFERENCES: CHROMIUM, COBALT-CHROMIUM ALLOYS, AND NICKEL HAVE BEEN IDENTIFIED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) AND / OR THE NATIONAL TOXICOLOGY PROGRAM (NTP) AS POTENTIAL CANCER CAUSING AGENTS.

#### **EXPOSURE ROUTES:**

EXPOSURE TO SPECIALTY STEEL ALLOYS OCCURS PRIMARILY FROM INHALATION OF DUST OR FUMES. HOWEVER, CONSTITUENTS OF THESE ALLOYS M. CAUSE EFFECTS DIRECTLY UPON THE SKIN OR EYES. CERTAIN CONSTITUENTS MAY ALSO BE HARMFUL IF SWALLOWED.

#### FIRST AID:

INHALATION - MOVE PERSON TO FRESH AIR UNTIL RECOVERED, CONSULT A PHYSICIAN.

SKIN - WASH WITH WATER AND MILD DETERGENT, CONSULT A PHYSICIAN.

EYE - FLUSH THOROUGHLY WITH WATER, CONSULT A PHYSICIAN.

INGESTION - WHILE INGESTION OF LARGE ENOUGH QUANTITIES TO CAUSE HEALTH EFFECTS IS UNLIKELY, CONSULT A PHYSICIAN IF IT OCCURS.

#### **SECTION VI - REACTIVITY**

STABILITY: STABLE

INCOMPATIBLE MATERIALS: NONE

HAZARDOUS DECOMPOSITION: NONE POLYMERIZATION: WILL NOT OCCUR

#### SECTION VII - SPILL OR LEAK PROCEDURES

PRODUCT IS A SOLID METAL AS SHIPPED NO POTENTIAL FOR SPILL OR LEAK.

#### SECTION VIII - SPECIAL PROTECTION INFORMATION

#### **VENTILATION:**

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME, USE LOCAL AND GENERAL EXHAUST VENTILATION TO KEEP AIRBORN CONCENTRATIONS OF DUST OR FUMES BELOW THE TLY.

#### RESPIRATORY PROTECTION:

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME IN EXCESS OF THE PERMISSIBLE EXPOSURE LIMIT, NIOSH APPROVED RESPIRATORS FOR PROTECTION AGAINST AIRBORN DUST OR FUMES SHOULD BE WORN. RESPIRATORS SHOULD BE USED IN ACCORDANCE WITH 29CFR 1910.134.

#### **PROTECTIVE EQUIPMENT:**

GLOVES AND BARRIER CREAMS MAY BE NECESSARY TO PREVENT SKIN SENSITIZATION AND DERMATITIS. IF YOUR PROCESS INVOLVES GRINDING OR ANY OTH ACTION THAT CAUSES THE RELEASE OF DUST OR FUMES, APPROVED SAFETY GLASSES OR GOGGLES SHOULD BE WORN.

#### **SECTION IX - SPECIAL PRECAUTIONS**

NONE

Quigley Company, Inc. 1
A subsidiary of Pfizer Inc.
233 East 42nd Street
New York, NY 10017

v Product: Q-COTE 6682

MSDS No: QUIGLEY / F1027 Revision: 01

Date: January, 1989

CERRO COPFER PRODUCTS CONTAN MEDS NUMBER - COPO-CO-COS ENCIPOMENTALILLIFACOR CHEST.: CHEST.: Chechaeltage IIII.

SECTION III. PHYSICAL

Appearance & Odor: Gray Slurry, alcohol odor

Water solubility (%): Insoluble pH: 1.7-2.7

Specific gravity (H\_D=1): 1.42 @ 72°F 11.8 lbs/cal

Viscosity - 1500-2000 cps @ 72°F Freeze Point - Less than 10°F

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 105°F (PMCC)

NFPA Fire Hazard Symbol Codes: Flammability: 2 Health: 1 Reactivity: 0 Special: 0

Extinguishing Media: Use dry chemical, alcohol foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.

Unusual fire or explosion hazards: None

Special fire-fighting procedures: None

### SECTION V. REACTIVITY DATA

Material is stable Hazardous polymerization will not occur

Chemical incompatibilities: Avoid contact with hydrofluoric acid, which can generate silicon tetrafluoride gas.

Conditions to avoid: None

Hazardous decomposition Products: None

### SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: May cause irritation to eyes, skin and respiratory tract. Long term overexposure to silica may produce silicosis, lung injury. Prolonged inhalation of mist or vapor may cause nausea, dizziness, light-headedness, vomiting or unconsciousness depending on the length of exposure and the first aid action given.

Target organs: Lungs

Primary entry route(s): Inhalation, ingestion, skin and eye contact.

Acute effects: May cause irritation to eyes, skin and respiratory tract. Short term exposure to silica can produce cough, wheezing and dyspnea. Prolonged inhalation of mist of vapor may cause nausea, dizziness, light-headedness, vomiting or unconsciousness depending on the length of exposure and the first aid action given.

Chronic effect(s): Long term exposure to silica causes silicosis, a form of pulmonary fibrosis. Continued exposure to silica can lead to cardiopulmonary impairment.

### Material Safety Data Sheet

Quigley Company, Inc. A subsidiary of Pfizer Inc. 235 East 42nd Street New York, NY 10017

Product: G-COTE 6682

MSDS No: GUIGLEY / F1027

Revision: 01

Date: January, 1989

### HEALTH HAZARD INFORMATION continued from page 2

### First aid:

SENT BY: Pfizer Inc.

Eye contact: Flush out eyes with generous amounts of water for at least 15 minutes. If irritation persists, see a Physician.

Skin contact: Wash from skin with mild soap and water.

Inhalation: Remove from exposure area.

Ingestion: Induce vomiting. Give water. Call a Physician.

Crystalline silica has been reviewed by IARC. IARC found limited evidence for carcinogenicity of crystalline silica in humans and sufficient evidence in experimental animals.

### SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Normal clean-up procedures. Care should be taken to avoid causing dust to become airborne. Vacuum cleaning systems are recommended. Respiratory protection not normally needed while in the slurry state. If the material dries, and airborne dust is present, wear a NIOSH approved respirator. Keep the spill away from heat, sparks, flames and welding operations. Ventilate area and evacuate employees from exposure if the airborne concentration exceeds the TLV

Waste management / Disposal: Disposal must be made in accordance with Federal, State and local regulations. If this product becomes a waste, it does meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous waste DOO1. As a hazardous liquid waste, it must be solidified before disposal in a landfill (Hazardous Waste Treatment, Storage and Disposal facility).

For transportation emergencies, call CHEMTREC, 24 hour information service, 1-800-424-9300.

### SECTION VIII. SPECIAL PROTECTION INFORMATION

### Personal protective equipment:

Googles: Chemical googles Gloves: Impervious gloves

Respirator: In the slurry state and if there are significant levels of vapors or mists, a NIOSH approved or equivalent organic vapor respirator is recommended. If the material is allowed to dry and there are exposures to airborne silica, use of an approved dust mask or particulate respirator is recommended when exposure limits may be exceeded. The Protection Factor of the respirator should be adequate for the particular dust exposure level.

Other: For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

Quigley Company, Inc. A subsidiary of Pfizer Inc. 235 East 42nd Street New York, NY 10017 Product: 0-00TE 6682

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MSDS No: GUIGLEY / F1027 Revision: 01 Date: January, 1989

### SPECIAL PROTECTION INFORMATION continued from page 3

### Workplace considerations:

Ventilation: Local exhaust ventilation to collector or containment recommended to control dust to below exposure limits.

Safety stations:
Safety eye wash and shower station should be available to the work area.

### SECTION IX. SPECIAL PRECAUTIONS

Other precautions: Good industrial hygiene practice requires that employee exposure be maintained below the recommended TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be employed.

The data and recommendations presented herein are based upon a review of Quigley files, published MSDS's, and standard toxicological reference sources. Guigley makes no guarantee or warranty, either express or implied as to the accuracy or completeness of these data and recommendations.

## CERRO COPPER PRODUCTS COMPANY - - - SAUGET, IL

EET .

HSDS NUMBER ASSIGNED ON CCPC-00-0209	
MANUFACTURER'S NAME	CONTACT
Piedmont Minerals Company, Incorporated	Technical Dept
CORESS (STREET, CITY, STATE AND ZIP CODE)	EMERGENCY TELEPHONE NO.
3514 W. Wendover Ave., Greensboro, N.C. 27407	(919) . 292-0949
TRADE NAME COMMON NAME OR SPECIFICATION	APPROVED BY JRS
Pyrofrac, Pyrotrol, Pyrophyl	DATE 4-13-88
CHEMICAL FAMILY OF PRODUCT TYPE	

YOR PHODUCTIFE Inorganic Oxides

CHEMICAL NAME	•	common name	REG.	CAE	OSHA 3 PERMISSIVE EXPOSURE LIMIT	ACETH 3	CARCII OGEN (Y/N)
Pyrophyllite	1<50	Same	IY	12269-78-2	NATE	.53 mg/m <sup>3</sup>	N
Silicon Cloxide	Pau	Quartz	TY	.7631-86-9	(4)	(4)	N
Andalusite	<5U	Same	Y	12183-80-1	NAIF	NAIF	N
	dust)	vstalline silica = 30 mg/m² + (	crys	talline quar	tz + 2)	YS:	
				rystalline of			-
		and tridymite,					<del> </del>
Paculated as per lists: OSHA	29 C-K	Report on Carcinoon	CGIH.	H-S/NTP AND LAF	C		

Percent Volatile by Volume: 0%

Solubility in Water:

Negl (gible

50 - 110 15s./cu.ft.

ph (10% solution): 6-7

Physical Appearance: White to medium tan

grains and powder with earthy odor.

P.C.E.:

Bulk Density:

### LEECTION IV SEINE AND EXPLOSION HAZARD DATA

Flash Point--Explosion Potential--Flammable Limits--Extinguishing Media This product is non flammable and will not support combustion

### SECTION Y HEALTH AND FIRST AID (SEE SECTION II FOR TLY)

Nuisance dust. See Section IX. FIRST AID: Remove to dust+free area. Inhalation:

Skin: ····NAIF

May abrade eyes. FIRST AID: Flush eyes with water for at least Eyes:

fifteen (15) minutes. Seek medical attention.

See Section IX. NOTE:

NOTE: The two numbers in the TLV and PEL columns represent the respirable/total fraction.

## SECTION VIZCORROSIVITY AND REACTIVITY, BATA TO A STATE OF THE SECTION OF THE SECT

Stability: Polymerization:

Stable

Conditions to be avoided:

Will not occur

Incompatability: NAIF

NAIF

### 

Normal Storage and Handling: See below,

Normal Use: Good housekeeping and good hygenic practices should be used.

Steps to be taken in case of leaks or spills: Employ dust-free clean-up procedures.

saste Disposal Method: .- The tearout and disposal of this product may generate dust. During tearout, observe the exposure limits outlined in Section II, and the personal protection precautions in Section VIII. Disposal shall be in accordance with Federal; Itate, and Local regulations.

\* \*\*SECTION VIII \*PERSONAL PROTECTION INFORMATION ESPIRATORY PROTECTION (SPECIFY TYPE) USE NIOSH OF MSHA ADDROVED PESDITATOR. .. ENTILATION . LOCAL Sufficient to keep dust below TLV's. MECHANICAL (GENERAL) OTHER Recommended YE PROTECTION Recommended THER EQUIPMENT RAIF

### A SECTION IX SPECIAL PRECAUTIONS (1997)

This product contains Silica. Inhalation of this dust in the respirable size range presents a potential health hazard. Excessive inhalation will increase your risk of serious respiratory disease (Silicosis).

### FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however #1edmont makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

CONFIDENTIAL Please restrict the use to your internal company requirements.

### MATERIAL SAFETY DATA SHEET

ENGINEERED LUBRICANTS CO.

MANUFACTURER'S NAME ENGINEERED LUBRICANTS CO. ADDRESS 11525 Rock Island Court Maryland Heights, MO 63043 ENLUBE Rapeseed Oil TRADE NAME GENERIC DESCRIPTION Vegetable Oil SECTION II HAZARDOUS INGREDIENTS Percent TLV Units None Known There are no known carcinogens according to current, published IARC, NTP & OSHA information. SECTION III PHYSICAL DATA Decomposes SPECIFIC GRAVITY (H<sub>2</sub>O=1): 0.92 BOILING POINT: SOLUBILITY IN WATER: Insoluble % VOTATILE BY VOLUME: Nil EVAPORATION RATE ( =1): N/A APPEARANCE & ODOR: Clear Amber Liquid with Bland Odor SECTION IV FIRE & EXPLOSION HAZARD DATA >600 FLASH POINT, 'F: METHOD USED: COC EXTINGUISHING MEDIA: CO2, Dry Chemical, Foam SPECIAL FIRE FIGHTING PROCEDURES: Fire fighters should wear selfcontained breathing gear when in confined areas. UNUSUAL FIRE & EXPLOSION HAZARDS: None known SECTION V HEALTH HAZARD DATA THRESHOLD LIMIT VALUE: None Established EFFECTS OF OVER-EXPOSURE: May cause minor irritation to sensitive skin with prolonged or repeated contact. May cause eye irritation. Avoid breathing mists or vapors.

EMERGENCY & FIRST AID PROCEDURES: Wash thoroughly with soap & water. Flush eyes with running water. If irritated or if irritation persists, consult physician. Wash contaminated clothing before reuse.

## MATERIAL SAFETY DATA SHEET

Product (Cont'd) ENLUBE Rapeseed Oil

### CONFIDENTIAL

Please restrict the use to your internal company requirements.

### SECTION VI REACTIVITY DATA

\_\_\_\_\_\_ STABILITY: Stable CONDITIONS TO AVOID: Excessive Heat INCOMPATIBILITY: Strong Oxidizing and Reducing Agents

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of Carbon HAZARDOUS POLYMERIZATION: Will Not Occur

### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Collect with inert absorbent material for disposal. Remove all sources of ignition.

WASTE DISPOSAL METHOD: According to local, State & Federal regulations 

### SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: None Normally Required - Concentration in air

determines protection required - NIOSH approved VENTILATION: LOCAL EXHAUST - N/A MECHANICAL - Acceptable

PROTECTIVE GLOVES: Rubber Gloves Recommended EYE PROTECTION: Safety Glasses/Goggles

OTHER PROTECTIVE EQUIPMENT: None generally necessary - Observe good

hygienic practices

### SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING: Do not store above 120F. It is recommended that containers be grounded when pouring. Do not flame cut, braze or weld empty containers (empty, part-full or full). Empty containers are not to be used for storage or shipment of waste of any type. When the use of an empty container for waste is unavoidable, all current local, State and Federal regulations and procedures MUST be followed.

OTHER PRECAUTIONS: Avoid contact with skin, eyes & clothing. Avoid or contain mists & vapors. Persons exposed to mists/vapors should wear approved breathing device. Keep container closed when not in use.

DATE PREPARED: 8/14/86

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding its accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. Therefore, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

### A. P. GREEN REFRACTORIES CO.

MEXICO, MISSOURI 65265 U.S.A.

MAR 03 1988

CERRO COPPER PRODUCTS COMPANY

### MATERIAL SAPETY DA'

A. P. Green Refractories Company Green Boulevard, Mexico, Missouri 65265 Telephone -- 314-473-3626

### SECTION I

PRODUCT NAME:

G-20, G-23, R-8023, R-8024

PRODUCT TYPE:

Insulating Refractory Bricks of Shapes

CHEMICAL FAMILY:

 $SiO_2 = 54-59\%$ ,  $Al_2O_3 = 33-40\%$   $Fe_2O_3 = 1-2\%$ , NaKO = 1-2%

FORMULA: Proprietary

### SECTION II

### PRODUCT HAZARDOUS INGREDIENTS

Chemical

CAS #

Cristobalite\* (SiO<sub>2</sub>)

 $0.05 \text{ mg/m}^3 **$ Respirable Dust

TWA

14464-46-1

Quartz\* (SiO<sub>2</sub>)

 $0.1 \, \text{mg/m}^{3} * *$ Respirable Dust

14808-60-7

- \* Not mechanically separate from each other or from other mineralogical phases
- in product as supplied.
- \*\*Source: American Conference of Governmental Industrial Hygienists, 1985-1986.

### SECTION III

### PHYSICAL DATA

SOLUBILITY IN WATER: None

VOLATILES BY VOLUME (%): None

SPECIFIC GRAVITY: 1.6-1.9

MELTING POINT: Not Applicable

APPEARANCE AND ODOR: Buff solid; no odor

MAR 03 1988

### SECTION IV

### FIRE AND EXPLOSION HAZARD DATA

PLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible

SPECIAL FIRE PIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None Known

### SECTION V

### HEALTH HAZARD DATA

### EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or chips can cause mechanical irritation.

CHRONIC: None Known

SKIN ACUTE: Can cause mechanical abrasion or cuts.

CHRONIC: None Known

INHALATION ACUTE: Dust, if present, may cause upper respiratory

irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-

term basis.

INGESTION ACUTE: Unknown

CHRONIC: Unknown

### EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush with water for 15 minutes. Consult

physician if irritation occurs.

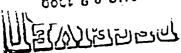
SKIN Treat abrasions or cuts using normal first aid procedures.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is not toxic as supplied, but its abrasive nature could damage internal

organs.

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MAR 03 1988

### SECTION VI

### REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None Known

HAZARD POLYMERIZATION: Will Not Occur

### SECTION VII

### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For broken shapes or fragments, sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: Can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

### SECTION VIII

### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when cutting or when removing this product after service.

VENTILATION: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn. Entry of chips into the eyes is a serious hazard, and eye protection should be worn at all times.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from cuts or skin abrasion. Safety shoes should be worn to protect feet from accidentally dropped bricks or shapes.

Material Safety Data Sheet Product: G-20, etc.

### SECTION IX

### SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pheumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

# CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0212

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gw,,,agy,n€NT4c:	FRIDR	
1011		
FURCHASING:	PRIOR	



MATERIAL SAFETY DATA SHEET						Please ra	HAZARD RATING ite consistent with NFF	PA Code
	S	ECTION I NAME	AND P	RODUCT				
MANUFACTURER'S NAME						CONTACT		
NORTON COMPANY						THOMAS Z. RICHARDS		
ADDRESS (STREET, CITY, STATE AND ZIP	CODE)					EMERGENCY TELEPHONE NO.		
1 NEW BOND STREET,		STER MA 01615.	ഹവദ			508-795-2690		
TRADE NAME, COMMON NAME OR SPECIF		JIEII, IIIA OTOTO						an
RESINOID BONDED GE		WHEELS				DATE A	Enaraya 4/30/90	
CHEMICAL FAMILY OR PRODUCT TYPE	ΛA	Y GRADE	4					
SEC	CTION II	COMPOSITION PE	R 290	FR 1910.12	00 (G)	(4)		
CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS	PERM	SHA MISSIVE URE LIMIT	ACGIH TLV	CARCIN OGEN (Y/N)
Alaba, Alumina	90	Alundum, Seeded Gel	Y	1344-28-1		ng/m³ al Dust)	10mg/m³ (Total Dust)	N
Alpha-Alumina	90	Aldriddin, Seeded Ger		1344-20-1	<del> </del>		· · · · · · · · · · · · · · · · · · ·	
Silicon Carbide	90	Crystolon	Y	409-21-2		ng/m³ al Dust)	10mg/m³ (Total Dust)	N
Zirconia Alumina	Zirconia Alumina 90 NZ, ZF, ZS Y **NAIF 5 (as 2						5mg/m³ (as Zirconium)	N
The grinding wheel may be comprised	of 1 or more o	f the above abrasives. The	chemical	s listed below may	be a part	of the bond	system.	
luorides (as F)	3	***N/A	Y	***N/A	2.5	mg/m³	2.5mg/m³	N
Calcium Oxide	3	3 Lime Y 1305-78-8 5r			5n	ng/m³	2mg/m³	N
Glass, Fibrous or Dust	10	Fiberglass	Y	**NAIF	••	NAIF	10mg/m³	N
©Silicon Dioxide	<1	Crystalline Silica	Υ	14808-60-7	0.1	mg/m³	0.1mg/m³	Y
*Materials are regulated by OSHA 29 Know Regulations.	CFR 1910.120	0, Hazard Communication S	Standard,	and/or the Massa	chusetts G	ieneral Law	Chapter 111F, Rig	ht To
Actual grinding tests with wheels known	n to contain Cry	staline Silica did not produ	ce any de	tectable amount o	f respirable	e free Silica		
	SECTIO	N III PHYSICAL A	ND C	HEMICAL D	ATA			
BOILING POINT "NAIF		TING POINT "NAIF				GRAVITY 2		
VAPOR PRESSURE "NAIF		· · · · · · · · · · · · · · · · · · ·	NAIF			NSITY "N		
EVAPORATION RATE "NAIF	SOL	UBILITY IN WATER Slight	2221211		SOLUBILIT	Y IN ALCOHO	OL **NAIF	
SOLUBILITY IN OTHER SOLVENT "NAIF	· · · · · · · · · · · · · · · · · · ·			CE AND ODOR DUCT: MAY GIVE	OFF ODO	R IN USE.		
	SEC	TION IV SPECIA	L PRE	CAUTIONS				
PRECAUTIONS TO BE TAKEN IN HANDLIN OTHER PRECAUTIONS:  **NAIF	IG AND STORAG	SE - NONE.						
S	ECTION \	/ CORROSIVITY	AND F	REACTIVITY	DATA	\		
	STABLE	POLYMERIZ	ATION	☐ MAY OC	OUR X	WILL NOT	OCCUR	
OMPATABILITY (MATERIALS TO AVOID	')							
DECOMPOSITION PRODUCTS								

In use, dust and decomposing odors are generated. In most cases, the material removed from the workpiece will be significantly greater than the grinding wheel

""N/A = NOT APPLICABLE

components. Coolants may produce other decomposition products.

CONDITIONS TO BE AVOIDED
\*\*NAIF

"NAIF - NO APPLICABLE INFORMATION FOUND

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA						
PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE	FIRST AID AND MEDICAL INFORMATION				
INHALATION (During Grinding)	ACUTE: COUGHING, SHORTNESS OF BREATH. CHRONIC: MAY AFFECT BREATHING CAPACITY.	REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.				
INGESTION (During Grinding)	NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.	OBTAIN MEDICAL ASSISTANCE.				
SKIN (During CONTACT & ABSORPTION	SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.	WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.				
EYE (During Grinding)	DUSTS MAY IRRITATE EYES.	WASH WITH LARGE AMOUNTS OF WATER OBTAIN FIRST AID AND MEDICAL ASSISTANCE, IF NEEDED.				
OTHER POTENTIAL HEALTH RISKS (During Grinding)	GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.	OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.				

### SECTION VII STORAGE, HANDLING AND USE PROCEDURES

NORMAL STORAGE AND HANDLING SEE ANSI STANDARD B7.1.

NORMAL USE

HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CON TAMINANTS)

STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS.

NORMAL CLEANUP PROCEDURES.

WASTE DISPOSAL METHOD

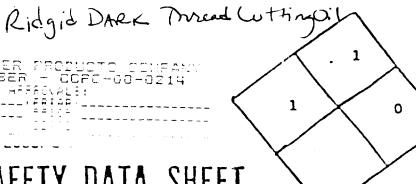
STANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS. PRODUCTS WITH LISTED FLOURIDES MAY HAVE SLIGHTLY SOLUBLE FLOURIDE SWARF.

SECTION VIII PERSONAL PROTECTION INFORMATION						
RESPIRATORY	PROTECTION (SF	PECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.				
VENTILATION	LOCAL	RECOMMENDED				
	MECHANICAL (GENERAL)	RECOMMENDED				
	OTHER	**NAIF				
PROTECTIVE O	SLOVES	AS DESIRED BY USER				
EYE PROTECT	ION	RECOMMENDED SEE OSHA 29CFR 1910.133				
OTHER EQUIPMENT AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION SEE OSHA 29CFR 1910.95		AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION)				
MEASURES TO WITH THIS MAT		IG REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT				
		SEE SECTION VII & VIII				

SECTION IX FIRE AND EXPLOSION HAZARD DATA						
FLASH POINT	**NAIF	METHOD USED	***N/A	FLAMMABLE LIMITS	LEL N/A	UEL ***N/A
EXTINGUISHING	MEDIA	USE WA	TER			
SPECIAL FIRE FI	IGHTING PROCE	DURES NONE				
EXPLOSION POT	TENTIAL .	"NAIF				

### FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

form Approved Bucget Eurese No. 44-81387 

## MATERIAL SAFETY DATA SHEET

2016-6143

FORMULA / TRADE SECRET SEC	TIONI			
RIDGE TOOL COMPANY	•	216/323-55		-
ADDRESS (A-mber, Street, City, State, and ZIP Code) 400 CLARK STREET, ELYRIA,	OHIO 44035			
IDENTITY RIDGID DARK THREAD CUTTING OIL	DATE	PREPARED	11/24/85	•
CHEMICAL FAMILY PETROLEUM HYDROCARBON	SIGNATURE OF	PREPARES	we the	اعا

. SECTION II HAZARDOUS IN	IGREDIENTS	• .	
HAZARDOUS COMPONENTS:	OSHA PEL	ACGIH TLV.	Z
MINERAL OIL CAS #64742-53-6	5mg/M <sup>3</sup>	5mg/M <sup>3</sup>	
			-
			<del> </del>

SECTION III PHYSICAL DATA					
BOILING POINT CFJ		545°F	SPECIFIC GRAVITY THEOR 12	0.9	
VAPOR PRESSURE INT MO.S	< 0.01	920°C	PERCENT VOLATILE ET VOLUME IN Negligib	le	
VAPOR DENSITY (AIR=1)		> 11	EVAPORATION RATE	*	
SOLUBILIT IN WATER	Negligible		рн	Neutral	
APPEARANCE AND ODDR	DARK LIQUID W	ITH FAIR	NT SULFUR ODOR.		

FLASH FOIRT (Named used) 330°F COC USED	FLAUDABLE LIMITS	tel Uel
FCAM DRY CHEMICAL, CO.  DICALIDA (CALIDA MOCIDANS  MATERIAL WILL NOT BURN UNITS	SS PREHEITED DO NOT ENT	FD FIRE CDACE
WITHOUT FULL BUNKER GEAR.		-A-F

		\$	ECTION	V· RE	ACTIVITY DATA	
STABILITY	UNS	ABLE		CONDITION	S 10 AVOID EXCES	SIVE HEAT, OPEN
	STAR	iu <b>t</b>			AND OXIDIZING MATE	
INCOMPATABILITY	(Veterial	s to evoid)	STRON	C OXID	IZING AGENTS	
UFON COMBUS	TION:	CO2	-			
HAZANDOUS		MAT OCCUR			CONDITIONS TO AVOID	
POLYMERIZATION		WILL NOT OC	CUR	х		
		SEC	TION VI	HEALT	TH HAZARD DATA	
ROUTE(s) OF	ENTRY	: <u>INHA</u>	LATION?	·	SKIN?	INCESTION?
HEALTH PAZA	RDS (A	CUTE & CH	RONIC):	CAUSES	S IRRITATION: MAY FE	SKIN DEFATTER UDON
FROLONGED (	OR REP	EATED CONT	TACT.			
CARCINOGENI	CITY:	NTP?			IARC HONOGRAPHS?	OSHA REGULATED?
0,1,01,100.			LISTED		NOT LISTED	NOT LISTED
SIGNS & SYN	PTOVS	OF FYPOSI	EF: O	II. MIST	INHALATION MAY CAUSE	DITTINECE NAMES
AND DIFFIC			<u></u>	12	INCLUATION THE CAUSE	DIZESS SAINFA
And Dirice	OLII D	111111111111111111111111111111111111111				
					Y EVOCUEE.	
MEDICAL COS	DITIC	NS GENERAL	LY AGGA	AVAIED E	BY EXPOSURE: SENSITE	VE DRY SKIN.
			<del></del>			
					N CASE OF CONTACT, IMM	
					., CALL A PHYSICIAN.	
AND WATER.	IF S	WALLOWED,	DO NOT	INDUCE V	COMITING. GET MEDICAL	ATTENTION, PEMONE
FLUID SOAR	ED CLO	THING AND	SHOES.	LAUNDER	R BEFORE REUSE.	
1						•

•	SECTION VII FRECAUTIC	NS FOR SAFE HA	NDLING USE
STEPS TO BE TAX	N IN CASE MATERIAL IS RELE	ASED OR SPILLE	D: IN CASE OF SPILL, DO
NOT USE WATER: S	OAK UP WITH SAND, EARTH OR	OTHER INERT MA	ATERIAL. PUT IN A SUITAB
CONTAINER. DISE	OSE OF IN ACCORDANCE WITH	LOCAL, STATE A	ND FEDERAL REGULATIONS.
	•		,
WASTE DISPOSAL 1	SETHOD: BURY IN AN AFPROVE	ED LANDFILL OR	INCINERATE IN ACCORDANCE
	TE AND FEDERAL REGULATIONS.		
WATERWAYS.			
		•	•
PRECAUTIONS TO	BE TAKEN IN HANDLING AND ST	ORING: AVOI	D CONTACT WITH EYES, SKIN
	REMOVE CONTAMINATED CLOTHIN		
AFTER HANDLING.	AVOID BREATHING MIST OR V	APORS	*
		•	
•			•
			•
			•
	NS: SINCE EXPTIED CONTA	THERE DRIVED P	PODUCT RESTAIR FOLLOW
	EVEN AFTER CONTAINER IS EMP		· ·
LABEL WARRINGS	EVEN AFTER CONTAINER IS EM	11ED.	
	•		
	SECTION VIII CONTROL ME	ASURES .	
NIOSH APPROVED	RESPIRATOR IF EXPOSED TO HO	T VAPOR OR MIS	т
	RECOMMENDED	5	PECIAL N/A
	N/A	0	THER
PROTECTIVE GLOVES	NECPRENE OIL IMPERVIOUS	EYE PROTECTION	AFETY GLASSES OR GOGGLES
OTHER PROTECTIVE ED	USE AS REQUIRED TO A	AVOID SKIN CONT	ACT.
HYGENIC PRACTIC	ES: WASH AFTER HANDLING.	•	

WE BELIEVE THE STATEMENTS, TECHNICAL INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE RELIABLE, BUT THEY ARE GIVEN WITHOUT WARRANTY OR GUARANTEE OF ANY KIN EXPRESSED OR IMPLIED, AND WE ASSUME NO RESPONSIBILITY FOR ANY LOSS, DAMAGE, OR EXPENSE, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THEIR USE.



### **GENERAL REFRACTORIES COMPANY**

CERRO COPPER PRODUCTS COMPANY 

Customer:

Date: June 28, 1990

Cerro Copper Products PO Box 66800 St. Louis, MO 63166

(For Sauget, IL)

Dear Customer,

This product contains a toxic chemical or chemicals as listed on MSDS form attached. It is subject to the reporting requirements of section 313-Title-111 of the superfund amendments and reauthorization act of 1985 and 40 CFR Part 372.

Product: Ritex 60 & SK-60

Sincerely Yours General Refractories Co.

Barney D. Fowler Manager Personnel & Safety

Notice: This Notification Must not be detached from the MSDS. Any copying and Distribution of this MSDS must include this notification.

MSDS328

### MATERIAL SAFETY DATA SHEET

### SECTION 1. Product Identification

Manufacturer: General Refractories Co.

Address: 600 Grant St., Room 3000, Pittsburgh, PA 15219

Main Telephone Number: 412-562-6000

Emergency Telephone Number: 215-666-4868

Product Name, Sales Name or Trade Name: RITEX 60 Product Type: Magnesite-Chromite Refractories

SECTION 2. Hazardous Ingredients

Chemical	Common	CAS	Per	OSHA	ACGIH	Carcinogen (Y/N)*
Name	Name	Number	Cent**	PEL	TLV	
Ferro-	(FeCr2O4)	12737-27-8	<18.0	(1)	(1)	No

Note: (1) Contains Cr(III) which is not listed as hazardous by NIOSH/ OSHA. ACGIH TLV for Cr(III) is 0.5 mg/m<sup>3</sup>. The main ingredient in this product is sinter MgO which is not hazardous.

\*Per NTP, IARC or OSHA lists. \*\*On Phase Basis. \*\*\*Total Basis.

### SECTION 3. Physical Data

Appearance: Brown-black brick shape Odor: Odorless

Specific Gravity: 3.10-3.25

Boiling Point: NI

Evaporation Rate: NI

Solubility in Alcohol: Insoluble Percent Volatile by Vol.: NI

Melting Point: Over 2200°C Vapor Pressure: NI

Solubility in H2O: Insoluble Other Solvents: Strong Acids

UEL NA

Vapor Density: NI

### SECTION 4. Fire and Explosion Hazard Data -------

Flash Point (Method used): Nonflammable

Flammable Limits: LEL NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA Unusual Fire and Explosion Hazards: NA Page 2

SECTION 5.

Health Hazard Data

Primary Routes Exposure Symptoms Emergency Procedures

of Entry

------Cough, impaired pulm. ------

Inhalation

func. if exposed to dust

Move to fresh air.

Ingestion

NE

Skin Contact

Irritation and Absorption

Wash with water.

Eyes

Irritation

Flush with water.

Other Potential NE Health Risks

NE

SECTION 6.

Potential Exposure

When

Hazard Form

Installation Dust generated during mixing:

Removal

Dust from tear-out after service.

SECTION 7.

Corrosivity and Reactivity Data

Stabliity: Stable

Incompatability (materials to avoid): None

Decomposition Products: None

Conditions to be Avoided: None

SECTION 8.

Disposal Procedures ------

Spill or Leak Procedures: Clean up like any solid material.

Waste Disposal Method: Approved landfill in accordance with all federal, state and local regulations.

Page 3

SECTION 9. Personal Protective Equipment/Procedures

Respiratory Protection: Yes Type: NIOSH/OSHA approved

dust mask.

Ventilation--Local: Yes

Mechanical(General): During handling (cutting of brick

or discharging the bags).

Other: NA

Protective Gloves: Non-porous gloves

Eye Protection: Safety glasses

Other Equipment: Steel toe shoes

Action to be Taken During Repair and Maintenance of Equipment that has been in Contact with this Product: Use Recommended Safety Equipment.

SECTION 10. Special Precautions

-----

During Storage: None

Other: None

SECTION 11. Preparation/Revision

------

Date: 9/16/85

NA=Not Applicable

NI=No Information or Test Data

NE=Not Established



### **GENERAL REFRACTORIES COMPANY**

	THE PROPERTY OF THE	BEDDINGSTO COMPANY
MEDS	NUMBER	- CCPC-00-0216
		rain Taymana
E CONTRACTOR	• THE FOLLER	(8) <u>6</u> 8
		÷ ; * ÷

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(For Sauget, IL)

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Product:	Ritex	СВ	

Sincerely Yours General Refractories Co.

Barney D. Fowler Manager Personnel & Safety

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Address: 600 Grant St., Room 3000, Pittsburgh, PA 15219

Main Telephone Number: 412-562-6000

Emergency Telephone Number: 215-666-4868

Product Name, Sales Name or Trade Name: RITEX CB Product Type: Magnesite-Chromite Refractories

SECTION 2.

Hazardous Ingredients -----

Chemical	Common	CAS	Per	OSHA	ACGIH	Carcinogen
Name	Name	Number	Cent**	PEL	TLV	(Y/N)*
Ferro- chromite	(FeCr2O4)	12737-27-8	<30.0	(1)	(1)	No

Note: (1) Contains Cr(III) which is not listed as hazardous by NIOSH/ OSHA. ACGIH TLV for Cr(III) is 0.5 mg/m<sup>3</sup>. The main ingredient in this product is sinter MgO which is not hazardous.

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SECTION 3. Physical Data ---------

Appearance: Brown-black brick shape Odor: Odorless

Specific Gravity: 3.10-3.25

Boiling Point: NI

Evaporation Rate: NI

Solubility in Alcohol: Insoluble

Percent Volatile by Vol.: NI

Melting Point: Over 2200°C

UEL NA

Vapor Pressure: NI

Solubility in H2O: Insoluble Other Solvents: Strong Acids

Vapor Density: NI

SECTION 4. Fire and Explosion Hazard Data

Flash Point (Method used): Nonflammable

Flammable Limits: LEL NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA Unusual Fire and Explosion Hazards: NA Page 2

SECTION 5.

Health Hazard Data

Primary Routes

Exposure Symptoms

Emergency Procedures

of Entry

Inhalation

Cough, impaired pulm. func. if exposed to dust

Move to fresh air.

Ingestion

NE

NE

Skin Contact

Irritation

Wash with water.

and Absorption

Irritation

Flush with water.

Other Potential

Health Risks

NE

NE

SECTION 6.

Potential Exposure

When

Eyes

Hazard Form

Installation

Dust generated during mixing.

Removal

Dust from tear-out after service.

SECTION 7.

Corrosivity and Reactivity Data

Stabliity: Stable

Incompatability (materials to avoid): None

Decomposition Products: None

Conditions to be Avoided: None

SECTION 8.

Disposal Procedures

Spill or Leak Procedures: Clean up like any solid material.

Waste Disposal Method: Approved landfill in accordance with all federal, state and local regulations.

Page 3

SECTION 9. Personal Protective Equipment/Procedures

Respiratory Protection: Yes Type: NIOSH/OSHA approved

dust mask.

Ventilation--Local: Yes

Mechanical(General): During handling (cutting of brick

or discharging the bags).

Other: NA

Protective Gloves: Non-porous gloves

Eye Protection: Safety glasses

Other Equipment: Steel toe shoes

Action to be Taken During Repair and Maintenance of Equipment that has been in Contact with this Product: Use Recommended Safety Equipment.

SECTION 10. Special Precautions

During Storage: None

Other: None

SECTION 11. Preparation/Revision

------

Date: 9/16/85

NA=Not Applicable

NI=No Information or Test Data

NE=Not Established

## **Material Safety Data Sheet**

## **PLASTICS**

### 1. PRODUCT IDENTIFICATION

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place Chicago, Illinois 60608

an Inland Steel company

Emergency Telephone: 312/762-2121 Chemical Name and Synonyms: Plastics

**Chemical Family: Plastics** 

Formula: Mixture

### II. PRODUCT DESCRIPTION AND HAZARDOUS INGREDIENTS/IDENTITY INFORMATION:

See Chart Inside

### III. PHYSICAL DATA

Melting Point F (C): See Chart Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

% Volatile by Volume (%): Not Applicable **Evaporation Rate:** Not Applicable

Appearance and Odor: Various colors from white to black, in sheet, plate, bar, structurals, or tubing.

### IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to

surrounding area.

Flammable Limits: Not Applicable

Specific Gravity ( $H_2O = 1$ ): See Chart

Unusual Fire and Explosion Hazards: None

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products from surrounding materials.

### DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABIL-ITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910, 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ayerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions in addition to those described herein, are required.

Grade	Specific Gravity	Melting Point °F
Thermosets		
Resin Reinforcement		
Phenolic Cellulose	1.10-1.40	DNM*
Phenolic Glass	1.70-1.90	DNM
Melamine Glass	1.70-1.95	DNM
Silicone Glass	1.55-2.05	DNM
Epoxy Glass	1.65-2.20	DNM
Polyester Glass	1.61-2.00	DNM
Vinylester Glass	1.83	DNM
Polyester FR Glass	1.83	DNM
Thermoplastics		
Nylon 6	1.14-1.18	420
Nylon 6/6	1.14-1.15	490
Acetal	1.34-1.42	350
Polyethylene	0.935-0.996	250
Polypropylene	0.090	32^
Polyvinyl Chloride	1.40-1.44	2
Chlorinated PVC	1.53	23.
Polyurethane	1.25	400
Plasticized PVC	1.2	200
Polyvinylidene Fluoride	1.77	320
Polystyrene	1.05	199-221
ABŚ	1.04	<b>231-</b> 257
Acrylics	1.18	194-221
Fluoroplastics	1.70-2.20	932
Polycarbonate	1.20	302
Polysulfone	1.24	374
Ryton	1.45-1.6	500-675

<sup>\* =</sup> Does Not Melt

### Flash Ignition Temp. °F

### Hazardous Products of Combustion

Non-Volatile Non-Volatile Non-Volatile Non-Volatile 650 650	Carbon Monoxide — Formaldehyde Carbon Monoxide — Formaldehyde Carbon Monoxide — Formaldehyde Carbon Monoxide Carbon Monoxide — Formaldehyde — Hydrogen Carbon Monoxide Carbon Monoxide Carbon Monoxide Carbon Monoxide — Hydrogen Bromide
750	Carbon Monoxide — Ammonia
750	Carbon Monoxide — Ammonia
613	Formaldehyde
665	Carbon Monoxide — Carbon Dioxide
830	Carbon Monoxide
735	Carbon Monoxide — Hydrogen Chloride
830	Carbon Monoxide — Hydrogen Chloride
590	Carbon Monoxide — Hydrogen Cyanide
610	Carbon Monoxide — Hydrogen Chloride
600	Carbon Monoxide — Hydrogen Fluoride
None	Carbon Monoxide — Hydrocarbons
490-530	Carbon Dioxide — Carbon Monoxide — Hydrocarbons Hydrogen Cyanide — Styrene Acrylonitrile
860	Methyl Methacrylate Monomer
NA	
1050	Hydrofluoric Acid Gas — Perfluorocarbon Olefins Bisphenol A Methane Phenol Diphenyl — Carbonate
550°-600°C	Carbon Monoxide — Carbon Dioxide Sulfur Dioxide — Hydrocarbons None

### V. HEALTH HAZARD DATA

Applicable Statutory or Recommended Occupational Exposure Limits: See Section II - Hazardous Ingredients. No TLV exists for plastic products, the hazards associated with plastic are for the individual constituents.

### **Emergency and First Aid Procedures:**

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

### VI. REACTIVITY DATA

Stability: Considered Stable

Incompatibility: Not incompatible with materials Hazardous Polymerization: Not Applicable Hazardous Decomposition Products: See Chart

Conditions to Avoid: When heated to decomposition or combustion temperatures products of decomposition include

carbon dioxide, carbon monoxide and other volatiles as indicated.

### VII. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Not Applicable Waste Disposal Method: Approved method of solid waste disposal.

### VIII. SPECIAL PROTECTION INFORMATION

When machining thermosetting plastics dry, a dusty condition may result. A suitable dust collection system should be employed along with a dust mask for respiratory protection. A protective cream or clothing should be used to protect skin for worker comfort. When machining any plastics, safety glasses or a face shield should be used.

### IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: When fighting fires where plastics are burning a self contained breathing apparatus (SCBA) must be used.

Issued By: Joseph T. Ryerson & Son Inc.

Date Prepared: November 8, 1985

MATERIAL SAFETY DATA SH CERRO COPPER PRODUCTS COMPANY DATA SHEET ID # DSO1 MSDS NUMBER - 8000-0218

APPROVA S:

ENVIRONMENTAL: SAFETY:

SECTION I - NAME AND PRODUCT

SECTION 1 - NAME AND PRODUCT

CONTACT:

KENNETH E. WEST

EMERGENCY TELEPHONE NUMBER:

(614)876-0244

TELEPHONE NUMBER FOR INFORMATION:

(614)876-0244

DATE PREPARED:

**MAY 18, 1990** 

FRODUCT NAME:

DURESS:

SCOTT-RAM PLASTIC A94, A97

ALLIED MINERAL PRODUCTS, INC.

SCOTT-RAM PLASTER A95

2700 SCIOTO PARKWAY COLUMBUS OHIO 43221

ARODUCT TYPE:

ALUMINUM OXIDE AND CHRONIC OXIDE REFRACTORY

SECTION II - REGULATED INGREDIENTS .

THERICAL NAME	CAS4	WEIGHT PERCENT RANGE	OSHA EXPOSURE LINIT	ACGIH TLV	CARCINOGEN Y/N
ALUMINUM OXIDE	1344-28-1	30-50	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	N
PHOSPHORIC ACID	7664-38-2	0-10	1 mg/m <sup>3</sup>	l mg/m <sup>m</sup>	N
ALUNINUM SILICATE	1302-76-7	30-50	15 mg/m <sup>2</sup>	10 mg/m <sup>2</sup>	N
SILICA (QUARTZ)	14808-60-7	0-5	0.1 mg/m <sup>3</sup> TWA	0.1 mg/m <sup>3</sup>	Y
ALUMINUM SILICATE	1302-78-9	0-5	15 mg/m <sup>2</sup>	10 mg/m <sup>3</sup>	N
CHROMIC OXIDE	1308-38-9	0-10	0.5mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	Y

EGULATED AS PER LISTS: OSHA 29CFR 1910, SUBPART Z: ACGIH, HHS/NTP: & IARC.

SECTION III - PHYSICAL AND CHEMICAL DATA

MOTLING POINT: N/A VAPOR PRESSURE: N/A

EVAPORATION RATE: N/A

**MELTING POINT: 3500 F** PERCENT VOLATILE BY VOL: N/A SOLUBILITY IN WATER: <6.0%

SPECIFIC GRAVITY: 3.16 VAPOR DENSITY: N/A

SOLUBILITY IN ALCOHOL: <6.0%

SOLUBICITY IN OTHER SOLVENTS:

H/A

.. PPEARANCE AND ODOR:

GREEN PLASTIC HIX - ACID ODOR-

PAGE 1 OF 4

### MATERIAL SAFETY DATA SHEET DATA SHEET ID # BS018

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

LASH POINT: N/A

(METHOD USED): N/A

FLANNABLE LINITS: LEL: N/A UEL: N/A

EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: N/A

EXPLOSION POTENTIAL: N/A

SECTION V - HEALTH, FIRST AID AND REDICAL TREATMENT

ROUTE(S) OF ENTRY:

INHALATION:

HEALTH HAZARDS (ACUTE and CHRONIC):

REPEATED INHALATION OF RESPIRABLE DUST FOR EXTENDED PERIOD OF TIME MAY CAUSE PERMANENT LUNG

INJURY (SILICOSIS).

EMERGENCY AND FIRST AID PROCEDURES:

REMOVE TO FRESH AIR.

INCESTION:

HEALTH HAZARDS (ACUTE and CHRONIC):

IRRITANT

EMERCENCY AND FIRST AID PROCEDURES:

DRINK PLENTY OF WATER. CONSULT A PHYSICIAN.

SKIN:

HEALTH HAZARDS (ACUTE and CHRONIC):

INRITANT

ENERGENCY AND FIRST AID PROCEDURES:

WASH WITH PLENTY OF WATER.

EYE:

HEALTH HAZARDS (ACUTE and CHRONIC):

IRRITANT

EMERGENCY AND FIRST AID PROCEDURES:

FLUSH IMMEDIATELY AND REPEATEDLY WITH WATER AND CONSULT A PHYSICIAN.

OTHER POTENTIAL HEALTH RISKS:

HEALTH HAZARDS (ACUTE and CHRONIC):

EXPOSURE TO HEXAVALENT CHRONIUM COMPOUNDS MAY CAUSE CANCER (REFER TO SECTION VI). THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS CLASSIFIED SILICA AND

SOME SILICATES AS POTENTIAL CARCINOGENS (GROUP 2A CARCINOGENS).

EMERGENCY AND FIRST AID PROCEDURES:

REMOVE TO FRESH AIR OR WASH WITH PLENTY OF WATER IN CASE OF SKIN CONTACT. MINIMIZE EXPOSURE AND CONSULT A PHYSICIAN.

PAGE 2 OF 4

## MATERIAL SAFETY DATA SHEET DATA SHEET ID \* DS018

1:

SECTION VI - REACTIVITY DATA

...ABILITY:

UNSTABLE: STABLE: X

HAZARDOUS POLYMERIZATION:

WILL OCCUR: WILL NOT OCCUR: X

INCOMPATIBILITY (MATERIALS TO AVOID):

ti/

### ECOMPOSITION PRODUCTS:

HIGH TEMPERATURE REACTION BETWEEN CHROMIUM OXIDE (Cr202) AND CERTAIN OTHER MATERIALS CAN RESULT IN HEXAVALENT CHROMIUM COMPOUNDS. GROUP I (Li, Na, K, ETC.) AND GROUP II (Ca, Mg, ETC.) COMPOUNDS CAN REACT WITH CHROMIUM OXIDE TO FORM HEXAVALENT CHROMIUM COMPOUNDS. HEXAVALENT CHROMIUM COMPOUNDS ARE CARCINOGENIC.

AFTER EXPOSURE TO TEMPERATURES ABOVE 1600 F, CRISTOBALITE AND TRIDYMITE ARE FORMED WHICH HAVE A TLV THAT IS HALF OF QUARTZ.

### CONDITIONS TO BE AVOIDED:

N/

SECTION VII - STORAGE, HANDLING AND USE PROCEDURES

### HORMAL STORAGE AND HANDLING:

STORE IN A COOL LOCATION. EXCESSIVE HEAT WILL DRY THE PRODUCT AND RENDER IT UNUSABLE.

### HORMAL USE:

WEAR RUBBER GLOVES AND SAFETY GOGGLES TO PROTECT FROM THE IRRITATING EFFECTS OF PHOSPHORIC ACID. WEAR APPROVED RESPIRATOR DURING THE REMOVAL OF THE PRODUCT. DO NOT BREATHE DUST.

### SIEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS:

CLEAN UP. RETURN TO PACKAGE IF NOT CONTANINATED.

### WASTE DISPOSAL NETHOD:

UNUSED PRODUCT - DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
USED PRODUCT - IF HEXAVALENT CHRONIUM IS DETECTABLE IN USED PRODUCT, IT MAY BE CONSIDERED A HAZARDOUS WASTE THAT SHOULD BE DISPOSED OF ACCORDINGLY.

## MATERIAL SAFETY DATA SHEET DATA SHEET ID # DS018

SECTION VIII - PERSONAL PROTECTION INFORMATION

### RESPIRATORY PROTECTION:

AS SPECIFIED IN OSHA STD. 29CFR 1910.134

VENTILATION:

LOCAL:

RECORMENDED

MECHANICAL:

RECOMMEND DUST COLLECTOR AND OTHER CONTROLS TO REDUCE DUST EXPOSURE.

OTHER:

N/A

PROTECTIVE CLOVES:

RUBBER CLOVES

EYE PROTECTION:

SAFETY COCCLES

### OTHER PROTECTIVE CLOTHING AND EQUIPMENT:

PROTECTIVE CLOTHING DURING REMOVAL TO AVOID SKIN CONTACT.

MEASURES TO TAKE DURING REPAIR/MAINTENANCE OF EQUIPMENT IN CONTACT WITH THIS PRODUCT:

AVOID BREATHING DUST. WEAR APPROVED RESPIRATOR.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

PRACTICE COOD HOUSEKEEPING. POST AREAS. INSIST EMPLOYEES WEAR APPROVED RESPIRATORS.

OTHER PRECAUTIONS:

RECOMMEND YEARLY CHEST X-RAYS AND VITAL CAPACITY TESTS FOR EMPLOYEES REGULARLY EXPOSED TO SILICA FOR EARLY DETECTION OF SILICOSIS. COMPLY WITH ALL GUIDELINES FOR CRYSTALLINE SILICA EXPOSURE. THE TARC HAS CLASSIFIED SILICA AND SOME SILICATIANS GROUP 2A CARCINOGENS; I.E., CHEMICAL FOR WHICH THERE IS CONSIDERED TO BE SUFFICIENT EVIDENCE OF CARCINOGENICITY IN EXPERIMENTAL ANIMALS, AND AT LEAST LIMITED EVIDENCE OF CARCINOGENICITY IN HUMANS.

STEAM SPALLING, WHICH CAN LEAD TO PERSONAL INJURY, MAY RESULT FROM IMPROPER DRYING AND FIRING PROCEDURES. FOR SAFEST USI AND OPTIMUM PERFORMANCE, PROPER PRACTICES MUST BE FOLLOWED.

THIS PRODUCT CONTAINS CHRONIC OXIDE, A CHRONIUN COMPOUND WHICH IS A TOXIC CHEMICAL SUBJECT TO REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 313. CHRONIUN COMPOUNDS DO NOT HAVE A CAS NUMBER. WEIGHT RANGE PERCENT CAN BE FOUND IN SECTION II. THIS PRODUCT CONTAINS PHOPHORIC ACID WHICH IS A TOXIC CHEMICAL SUBJECT TO REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 313. CAS 47664-38-2. WEIGHT RANGE PERCENT CAN BE FOUND IN SECTION II.

- \*\*NAIF = NO APPLICABLE INFORMATION FOUND
- \*\*N/A = NOT APPLICABLE

PAGE 4 of 4

FORM NO LSPICES A-MAY 1969

SHELL OIL COMPANY

SHELL CHEMICAL COMPANY

SHELL DEVELOPMENT COMPANY

SHELL PIPE LINE CORPORATION

MSDS 76FF-1

Shell Sol 140

## MATERIAL SAFETY DATA SHEET

information on this form is furnished solely for used for any other purpose. Use or dissemination stitute prounds for legal action.	or the purpose in of all or any	DATE Of	MEDS	COPPE NUMBE	R - CCF	075 COM 0-00-01	IP AN' 220	not
				VT41:	_ (55155)_ _(55155)_			
	ų	SEC	enes : Purchail	3;	] Faida)[			
Shell Chemical Company				•	713-	4735-5461	ο,	
One Shell Plaza, Box 2463,	Houston,	Texas	77001		<del>•</del>			
CHEMICAL HAME AND SYMONYMS				TRAD	Shel	1 501 140	)	
Hydrocarbon		-	FORMULA					
SEC	TION II	HAZARI	DOUS INGR	EDIENT	rs.			
COMPOSITION		505615		LD <sub>50</sub>			LC50	T
COMPOSITION		SPECIE	S ORAL		DERMAL	CONCENTRA	TION	HOURS
						,		
Solvents	100	Rat	>10 m1/	kg		>700 [	pm	4
							<del></del>	
		Rabbi	t	> 2	.0 ml/kg			
· ·								
				1.				<u>i</u>
					_			
		·						
	SECTION	III PE	TYSICAL D	ATA_				
BOILING POINT ( F)	875	-408	SPECIFIC	GRAVITY	(H2O=1)	0 60°F	0.	786
VAPOR PRESSURE (mmHg) @ 100°F		1	PERCENT BY VOLUM	(E (*)				-
VAPOR DENSITY FAIR = 1)		5.3	EVAPORA	TION RAT	E		0.	03
SOLUBILITY IN WATER	Neg	ligibl	1		- <u> </u>			
APPEARANCE AND ODOR Light co			ith hydro	carbon	odor			
SECTION I	V FIRE	AND EX	PLOSION H	IAZARD	DATA			<u>, , , , , , , , , , , , , , , , , , , </u>
FLASH POINT (Method used) Tag Closed Cup = 141°F			FLAN	MABLE LIN	1175	1.0	1	u•: 6.0
Extlude air - use foam, CO.	C+1	,,,,,,,,,		chani		1 1.0		
Do not use water, exclude a	gir, cons	ult lo	cal fire	marshal	 			<del></del>
	- <del></del>							
UNUSUAL FIRE AND EXPLOSION MAZARDS			·					
Handle as a combustible man	terial							
Modified by Shell Oil Company								

SECTION V HEALTH HAZARD DATA
THRESHOLD LW TIMESE 175 ppm (calculated)
Anesthesia - neadache, nausea, dizziness, atc. Liquid mildly to moderately irritating
to skin and eyes.
EMERGENCY AND FIRST AID PROCEDURES
Remove victim and restore breathing if required. Remove from skin and with soap
and water. Flush eyes with water for at least 15 minutes.

		SECT	CION VI R	EACTIVITY DATA .
STABILITY	STABILITY UNSTABLE		COND TION	open flame and sparks
	STABLE	Х		
INCOMPATIBILITY	(Materials to av	Not app	licable	
HAZARNOUS DECON	MEDSIT ON PRODUC	CO, CO	, when cor	nbusted
-AZARDOUS	1	DCCU#		CONDITIONS TO AVE.C
POLYMERIZATI	!	L MOT OCCUR	Х	

SECTION VII SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Avoid open flame or spark sources. Provdie adequate ventilation.
waste Disposal Method Evaporate or flush with water to an open, well-ventilated area. Use oil sewer if
available. Remove to container.

	SECTION VIII	SPECIAL PROT	ECTION INF	ORMATION	
RESPIRATORY PROTE	CCTION (Specify type) Orga	anic canister ma	sk or air	pack as required	
VENTILATION	LOCAL EXHAUST	Desirable		SPECIAL	
	MECHANICAL (General) With approved Cla	ass D explosion-	proof moto	other rs and switches	
PROTECTIVE GLOVES			<del></del>	nal eye cover to guard aga	inst
OTHER PROTECTIVE EQUIPMENT -			unexpected splashing		

SECTION IX	SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN MANDLING AND STORING	Avoid excessive heat.	
Avoid open flames and spark sources.	Avoid splash-filling.	Provide adequate
OTHER PRECAUTIONS		

***[	D. M. Sheets
TITLE SI	pervisor - Reg Aff - Chem Prods
COUP4=*	Shell Chemical Company
SIGNATURE	Amblert
DATE	June 1974

THE HYDPMAT DN CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE HORIVER HO WARRANTY IS EXPRESSED ON IMPLIED RECADURE THE ACCURACY OF THESE DATA ON THE RESULTS TO BE DISTAINED FOR THE RESULTS TO BE DISTAINED FOR THE USE THEREOF.

YEMBOD ADJUMES HO RESPONSIBLITY FOR INJURY TO VERSEE OF THISD FEBRUARY HORIZONES HORIZON THE WARRAND IN THE ADDITION OF A SAFETY ADDITIONAL WELDOW ASSUMED NO BEST OF A SAFETY ADDITIONALLY VENDOM ASSUMET, CAUSED BY A SABREMAL USE OF THE WARRAND AND THE ACCURATE AND THE WARRAND AND THE WARRAND





NPCA HMIS CODE

Health Hazard	3
Flammability Hazard	0
Reactivity Hazard	0
Maximum Personal Protection	E

"DS OF TY		76		Protecti	on E
	( b)	<u> </u>	CERRO COFF MSDS NUM	TER PRODUC BER - COPE	TS COMPANY 2-00-0221
				AFPF3VAL8:	
	MATER	IAL SAFETY	ENVIRONMENTAL		
			- cercii <u>lllll</u> - Anarhaelms:	:56145/ (PRICE)	
	ATERIAL IDENTIFICATION———— OTTAWA INDUSTRIAL S	SAND COMPANY			815/434-0188
	State. Zip Code) P. O. BOX		. II. 61350		015/454 0100
	Silicone Dioxide				
Chemical Family Extracted Inor	Chemical Al	ostract Number		ormula Number SiO	2
Trade Name and Synonyms					
Silurian Filt. FLINT SHOT-2. MELT-Standard SPECIAL BLEND	0;2050;3050;4060 ration Sand 4;2.6;2.8;3.0;4.0 ;Fine; Extra Fine -Coarse; Medium; Fine ;105;115;125;140	SIL-CO-SIL #270 Silicon Carbide Sand Mill Media ASTM-C-109; 190 Cracked Grain AFS 50/70 Engine Sand	;#290;#295;#390;#39 Sand	95;#398;#400	Crystal Federal Fine #17 Silica Special Bond Bond Flint Silica Sawing Sand
SECTION II	HEMICAL AND PHYSICAL PROPERTIE			•	
Molecular Wt. N/A	Boiling Point 40	46 <sup>0</sup> F Mei	ing Point 3050°F	Specific Gra	svity (Water $=$ 1) or Bulk Density $N/A$
Odor/Appearance Whit	e, granular, crush	ed or ground-1	ike flour - No	odor	
SECTION IV————————————————————————————————————	plosion hazard.  pmposition — — — — — — — — — — — — — — — — — — —	-4808-60-7 rang			total
Permissible Exposure Limits					
Threshold Limit	Value 10 mg/M <sup>3</sup>	•	•		
Prolonged overex specified above delayed lung inj of disabling, pr	Respirable of posure to Crystall: may cause scarring ury, silicosis, may ogressive and some cal nodulation in	ine Free Silica of the lungs was result from the times fatal pu	with cough and preathing free	shortness of silica. Sil	breath. A icosis is a form.
Emergency and First Aid Proced	lures				
EYES: Wash eyes	with large amounts	of water. Oh	otain medical a	ttention if	irritation persists.
SECTION VI	EACTIVITY DATA				
Stability	Unstable Conditions to	Avoid NON			
<b></b>	Stable &X			•	
mpatability (Materials to Av	od Endorthermic -	Dissolved by	ludrofluorio >-	33 (UE)	
	Direct miching	presentation i	AGEOFFIGUETS WO	.id (nr)	

NONE

NONE

Will Hot Occur

May Occur Conditions to Avoid

hezardous Decomposition Products

Persons not wearing protective equipment as noted in Section VIII should be restricted from areas of spills or releases until cleanup has been completed. If Crystalline free silica is spilled or released, the following steps should be taken:

'aste Disposal Method: Collect spilled material in the most convenient dustless, safe, manner. Crystalline free silica may be reused or disposed of in an unrestricted sanitary landfill.

SECTION VIII-SPECIAL PROTECTION INFORMATION-

Respiratory Protection Good Industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when they fail and need to be supplemented. If the use of respirators is necessary, the only respirators permitted are those that have been approved by the Mine Safety and Health Administration (formerly Mining Enforcement and Safety Administration) or by the National Institute for Occupational Safety and Health.

In addition to respirator selection, a complete respiratory protection program should be instituted which includes regular training, maintenance, inspection, cleaning and evaluation.

The chart below indicates the minimum respiratory protection required given a known exposure.

RESPIRATORY PROTECTION FOR CRYSTALLINE SILICA (From September, 1978 Occupational Health Guideline for Crystalline Silica, U.S. Department of Labor, U.S. Department of Health and Human Services, et.al.)

CONDITION	MINIMUM RESPIRATORY PROTECTION®  REQUIRED ABOVE X®®mg/m³
Particulate Concentration 5X** mg/m <sup>3</sup> or less	Any dust respirator
10X** mg/m <sup>3</sup> or less	Any dust respirator, except single-use or quarter-mask respirator.  Any fume respirator or high efficiency particulate filter respirator.  Any supplied-air respirator.  Any self-contained breathing apparatus.
50X** mg/m <sup>3</sup> or less	A high efficiency particulate filter respirator with a full facepiece. Any supplied-air respirator with a full facepiece, helmet or hood. Any self-contained breathing apparatus with a full facepiece.
500x°° mg/m³ or less	A powered air-purifying respirator with a high efficiency particulate filter.  A Type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous-flow mode.
Greater than 500X**mg/m <sup>3</sup> or entry and escape from unknown concentrations	Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.
	A combination respirator which includes a Type C supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure or continuous-flow mode and an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode.
Fire Fighting	Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

<sup>\*</sup>Only NIOSH-approved or MSHA-approved equipment should be used.

SAFETY GLASSES AND GLOVES ARE OPTIONAL, DEPENDING ON PRODUCT USAGE.

Crystalline Silica (quartz) is not D.O.T. regulated.

Precautions to be taken in handling and storage. Use dustless or wet systems when handling and clean-up so that exposure does not exceed Threshold Limit Value in Section V above.

Other precautions. Practice good housekeeping, maintain ventilation system and post appropriate warning notices where product is used, stored and handled. Employees likely to be exposed to potentially hassardous crystalline silica levels should receive pre-employment and periodic medical examinations in order to determine any "pre-existing physical conditions which may place the exposed employee at increased risk, and to establish a baseline for future health monitoring. Examination of the respiratory and cardiovascular system should be stressed.

William D. Darroy
William D. Darroy

Supervisor Date | 1/19/1985

<sup>\*\*</sup> X indicates the permissible exposure as defined above.



CERRO COPPER PRODUCTS COMPANY

#### I. MATERIAL IDENTIFICATION

Name: Soluble Oil

Conoco Product Code: 7931

Synonyms: Soluble Oil - Cutting Fluid Chemical Family: Petroleum Hydrocarbon

Manufacturer: Conoco Inc.

Address: P.O. Box 1267, Ponca City, OK 74603

CAS Registry No.: Mixture
Transportation Emergency No.:
(800) 424-9300 (Chemtrec)
Product Information No.:

(405) 767-6000

#### II. HAZARDOUS INGREDIENTS

HAZARD DATA

Hazard Determination:

Health Effect Properties: Hydrocarbon/Oil Mist.

Potential respiratory toxicity.

Physical Effect Properties:

Product/Mixture: None.

Not applicable.

#### III. PHYSICAL DATA

Appearance and Odor: Brown liquid; mild petroleum hydrocarbon odor.

Boiling Range (°F)

650-1000

Specific Gravity (H<sub>2</sub>0=1)

0.90

Vapor Pressure (mmHg)

<u>Nil</u>

% Volatile (by volume)

<u>N11</u>

Vapor Density (Air=1)

NA

Evaporation Rate (Ether=1)

Nil

Solubility in Water

Emulsifies 100% with water

#### IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Products: Normal combustion forms carbon dioxide incomplete combustion may produce carbon monoxide.

Conditions To Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

#### V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 295° F (PM) Autoignition Temperature: 680° F

Handle and store in accordance with NFPA procedure for Class III B Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, foam, or carbon dioxide.

- Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.
- Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.
- Soluble Oil is normally used in concentrations of 10% or less in water, therefore, in normal use it is not combustible.

National Fire Protection Agency (NFPA) CLASSIFICATION
Health 0 Fire 1 Reactivity 0 Least - 0 Slight - 1 Moderate - 2
High - 3 Extreme - 4

#### VI.TRANSPORTATION AND STORAGE

DOT HAZARD CLASS: Not Applicable

Precautions To Be Taken In Handling And Storing: Product is Class III B Combustible Liquid per NFPA Code No. 30-1984. Store and handle accordingly.

Shipping Paper Description: Not D.O.T. Regulated.

Placard: Not D.O.T. Regulated.

D.O.T. Label: Not Regulated.

OSHA Label: CAUTION: Minimize exposure. Inhalation of concentrations of oil mist may cause irritation of the respiratory tract. Use in well-ventilated area.

#### VII. HEALTH HAZARD INFORMATION

PEL 5 mg/m<sup>3</sup> \* TLV 5 mg/m<sup>3</sup> \* Ceiling Value Not Established AEL 5 mg/m<sup>3</sup> \*

\* This value refers to airborne mists of petroleum-based cutting oils or white mineral oils.

Primary Route(s) of Exposure/Entry: Skin, inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated By Exposure:
No adverse health effect has been identified specifically for this
product. Health effect information from animal and human studies has
been included on related materials, even though health experts may
disagree as to the significance of this data.

#### VII. HEALTH HAZARD INFORMATION (continued)

Mouse skin painting studies have shown that highly solvent-refined petroleum distillates having a boiling point below 700° F, and which are similar to ingredients in this product, have not caused skin tumors.

Similar substances can cause irritation to eyes, lungs, or skin after prolonged or repeated exposure. Overexposure may cause central nervous system depression.

Listed as Carcinogen or Potential Carcinogen by: NTP No IARC No OSHA No

#### VIII. EMERGENCY AND FIRST AID PROCEDURES

Eyes: Immediately wash with fresh water for at least 15 minutes and get medical attention.

Skin: Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation persists, consult a physician.

Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

If exposed to <a href="https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/https://exposed.com/htt

Inhalation: If overexposure occurs, remove individual to fresh air. If breathing stops, administer artificial respiration.

Ingestion: If this material is swallowed, do not induce vomiting. If vomiting begins, lower victim's head in an effort to prevent vomitus from entering lungs. Immediately consult a physician. Do not attempt to give liquid to an unconscious person.

Note to Physicians: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

#### IX. SPILL, LEAK AND DISPOSAL PROCEDURES

RCRA HAZARDOUS WASTE: Yes \_\_\_\_ No X

In Case Of Spill Or Leak: Contain spill immediately in smallest area possible.

Recover as much of the product itself as possible by such methods as vacuuming, followed by soaking up residual fluids by use of absorbent materials. Remove contaminated items including solids and place in proper container for disposal. Avoid washing, draining, or directing material to storm or sanitary sewers.

## IX. SPILL, LEAK AND DISPOSAL PROCEDURES (Continued)

Waste Disposal Method: Recycle as much of the recoverable product as possible.

Dispose of nonrecyclable material by such methods as controlled incineration, complying with federal, state and local regulations.

#### X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: Impervious to protect against chronic skin contact.

Eye Protection: Safety glasses with side shields.

Other Precautions: Skin contact should be minimized. Complete protective clothing if material is being handled hot. Launder or discard contaminated clothing. Discard contaminated leather material.

The above data is based on tests and experience which Conoco believes reliable and are supplied for informational purposes only. CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA AND NOTHING CONTAINED THEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE PRODUCT DESCRIBED, OR THEIR USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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	SOLANCI S OSSINEDIS P	•	

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MATERIAL SAFETY DATA SHEET	* ** *****				CV-1426
EMERGENCY TELEPHONE	TID (Or	22. 43.00	CHEWIAEC	200	
··	<del></del>	31-4700	800/424-9	300	-
the care t	I. PR	ODUCT IDE	ENTIFICATION CHEMICAL NAME		
KERMAC 140 Flash Naphtha	ı, Rule 66		Medium Al	iphatic	Solvent Naphtha
Petroleum Hydrocarbon No	· :	-in cope	C <sub>10</sub> -C <sub>1</sub> ,		NEW TIOUS COINE
Leakr 0 Shight - 1 Milderate 2 et gh - 3 Extrem	-4	0	2	:   	0
	11 8	SUMMARY (	OF HAZARDS		
CAUTION! COMBUSTIBLE EIG INJURY. CAN CAUSE CENTR CAN ENTER LUNGS AND CAUS Use ventilation adequate with eyes, skin and clos	RAL NERVOUS SE DAMAGE. e to keep vi thing: Nasi	SYSTEM DE Keep away apor below h thorough	PRESSION. ASPI from heat and recommended ex ly after handli	RATION H flame. posure l	AZARD IF SWALLOWED - Avoid breathing vapor imits. Avoid contact
		" SIHPP NG NAME AN	ВЗвич о		DOT HAZARD CLASS
DOT Hazardous Material Yes <u>Y</u>	No	Petroleu	m naphtha UN 12	55	Combustible liquid
	III. HA	ZARDOUS	COMPONENTS		
INGREDIENT		% RANGE	PEL/TLV	1	HAZAND
Medium Allphatic Solvent (CAS #64742-88-7)	t Naphtha	100	Stoddard Sc TWA-100 ppm		Combustible Acute Health Chronic Health

IV. HEALTH INFORMATION

EXPOSURE BY	RY	EXPOSURE GHARACTERISTICS AND FIRST AID
	EFFECTS	Acute: headache, nasal and respiratory irritation, nausea, drowsiness, breathlessness, fatigue, central nervous system depression, convulsions, and loss of consciousness.
INMALATION	CIRST AID	Move exposed person to fresh air. If breathing has stopped, perform artificial respiration. Get medical attention as soon as possible.
	EFFECTS	Acute: irritation Chronic: dermatitis
SKIN	FIRST AID	If clothing soaked, immediately remove clothing and wash skin with soap and water. Launder clothing before wearing. Get medical attention promptly.
	EFFECTS	Acute: irritation
LYLS	FIRST AID	Immediately flush eyes with water for a minimum of 15 minutes, occasionally lifting the lower and upper lids. Get medical attention promptly.
SWALLOWING	EFFECTS	Acute: aspiration hazard, headache, nausea, drowsiness, fatigue, pneumonitis, pulmonary edema, central nervous system depression, convulsions and loss of consciousness.
INGESTION	FIRST AID	Call a physician immediately, ONLY induce vomiting at the instruction of a physician. Never give anything by moulh to an unconscious person
Medical Conditions Agreeated by Expos		N/AV
LISTED AS POTENTIA OR CARCINOGEN	L CARCINOGEN	NOT LIGTED NATIONAL TOXICOLOGY PROGRAM INTERNATIONAL AGENCY FOR RESEARCH ON CANCER OSHA

## V. EMPLOYEE PROTECTION

Designations PROTECTION LITURES NESSMAPPROVED RESPIRA	TORS REPER TO MANUFAL (UM	EA & PROTECTION PACTORS	AND DDI W STANDARD 1910 124 A	M A GUIDELINES	
Up to 1000 ppm, half-mask org vapor respirator or full-face fighting, or unknown concentr pressure	supplied air	respirator.	Greater than 5000	ppm, fire	e
C+E	· · · · · · · · · · · · · · · · · · ·				
Safety glasses, chem	ilcal goggles o	r face shield	, as appropriate.		
SAM	<u> </u>				
Gloves: Nitrile, ne	oprene or othe	r material re	sistant to maphth	<b>a</b> .	
"Maintain local or dilution ve unloading, tank gauging, etc. hygiene personnel to determin	remain upwind	. Request as			
VI.	FIRE PROTECT	TION INFORMA	TION		
PLASH PERINT AND METHOD	AUTOHORTION TEMPERAL	THE PLANMABLE LI	MITS % VOLUME IN AIR	LOWER	, innen
rag Closed Cup 148°F	450°F			1	6
Carbon dioxide, dry chemical, to cool containers exposed to disperse the vapors.	or foam. Wat fire. If lea	er stream may k or spill ha	spread fire, use s not ignited, us	water spr e water sp	ray only oray to
Incomplete combustion can yie	ld carbon mono	xide and vari	ous hydrocarbons.		
Can form combustible mixtures	with air when	heated.			
STORAGE	•		*.	• • • • • • • • • • • • • • • • • • • •	
Do not store with strong oxid	lzers. Store	as OSHA Class	III A combustibl	e liquid.	-1
WILL NOT OCCUR X MAY OCCUR		STABLE X	_ UNSTABLE		
VII. PI	HYSICAL AND C	HEMICAL PRO	PERTIES		
ROILING POINT	VARDA PRESSURE		EVAPORATION (ETHYL ETHER	- 11	
360-410°F	Reid V.P. 0.1		Estimated 8 T	imes Slowe	<u>:</u> r
100	159		Clear Liquid		
Petroleum Naphtha Approx. 1 ppm	N/A		5.5		
Engaine quarter (High = 1)	VISCOSITY		SOCUBILITY (g/1000 WATER	AT 20 °C)	
ō.78	1.32 cSt @ 10	0°F	Negligible		

VIII. E	ENVIR	ONMEN	ITAL	PRC	TECT	ON
---------	-------	-------	------	-----	------	----

SPILLS	sources. Build dike	to contain flow. Remove	te area and remove ignition the free liquid, do not flush to sewe and place in closed container for
		GPA WADIE LUWS NIMBER	WARTS CHARACTERIETIC OR HAZAND OTDE
اد	EPA Hazardous Waste Yes No _	N/A	N/A
WASTE		te disposal company. Cor zardous waste disposal \$1	usider recycling or inclneration.
engeAng	C. f. Russel	L	DATE PREFAMED 12-22-88
DISCLAIN	488		

The information and recommendations contained in this publication have been compiled from sources believed to be reliable and to represent the best current opinion on the subject at the time of publication. Since we cannot anticipate or control the many different conditions under which this information or our products may be used, we make no guarantee that the recommendations will be adequate for all individuals or situations. Each user of the product described herein should determine the suitability of the described product for his particular purpose and should comply with all federal and state rules and regulations concerning the described product.

AMBREVIATIONS	
CAS #	Chemical Abstracts Service Number
N/A	Not Applicable
N/AV	Not Available
ppm	Parts per million
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
	Both the OSHA PEL and the American Conference of Governmental Industrial Hygienists TLV were reviewed. Where a difference existed, the more restrictive of the two was selected.
STEL	Short Term Exposure Limit
THA	Time-Heighted Average
	•

# TRIANGIF

## TRIANGLE REFINERIES, INC.

SPECIALTY PRODUCTS DIVISION
3020 KNIGHT STREET • SUITE 130 • SHREVEPORT, LOUISIANA 71105
TELEPHONE (800) 548-3417
(318) 861-0954

		I I KOVEC	
FMULEE	NMENTAL:	27112	
4 : 5 : 5 : 5	,		
CHTE:	<u> </u>		
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	7 7 4		
		-	

MSDS NUMBER

MATERIAL SAFETY DATA SHEET

COMPANY

CHEMTREC

CV-1426

**EMERGENCY TELEPHONE** 

405/270-2526

800/424-9300

#### I. PRODUCT IDENTIFICATION

PRODUCT	· · · · · · · · · · · · · · · · · · ·			CHEMICAL NAME	
KERMAC 14	10 Flash N	aphtha, Rule 6	6	Medium Aliph	natic Solvent Naphtha
CHEMICAL FAMILY				FORMULA	CAS NUMBER
Petroleur	n Hydrocar	bon Naphtha		C10-C12	64742-88-7
NATIONAL FIRE PROT		N HAZARD RATING CODES	HEALTH CODE	FIRE CODE	REACTIVITY CODE
Least - 0	Slight - 1		1 0		
Moderate - 2	High - 3	Extreme - 4			

#### II. HAZARDOUS COMPONENTS

	II. HAZARDOUS	COMPONENTS	
INGREDIENT	₩	OSHA LIMIT	TLV
140 Flash Naphtha	100	Similar to Stoddard Solvent	Similar to Stoddard Solvent
		TWA-500 ppm	TWA-100 ppm STEL-200 ppm
	·		
,			
<i>e</i> *			

#### III. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT	VAPOR PRESSURE	EVAPORATION (ETHYL ETHER : 1)
360-410°F	<2.3 mmHg @ 100°F	Estimated 8
ICENT VOLATILE BY VOLUME (%)	MOLECULAR WEIGHT	APPEARANCE
100 مسر	158	Clear Liquid
ODOR AND THRESHOLD	MELTING POINT	VAPOR DENSITY (AIR = 1)
Petroleum Naphtha-Approx. 1 ppm	Not Available	5.5
SPECIFIC GRAVITY (H20 + 1)	VISCOSITY	SOLUBILITY (G/1 OOG WATER AY 20 °C)
0.77	<32 SUS @ 100°F	Negligible

	IV. FIRE PROTECT			
Tag Clased Cup 1/2°F	AUTOIGNITION TEMPERA	TURE FLAMMABLE LIMITS % VOLU	JME IN AIR LOWER	UPPER
Tag Closed Cup 143°F EXTINGUISHING MEDIA	450°F			<u>b</u> <u>b</u>
Carbon dioxide, dry cher cocl containers exposed perse the vapors.	nical, or foam. Water of to fire. If leak or s	stream may spread fi pill has not ignited	re, use water spray , use water spray to	only to o dis-
HAZARDOUS DECOMPOSITION PRODUCTS	-	•		
Incomplete combustion ca	an yield carbon monoxide	e and various hydroc	arbons	
FIRE AND EXPLOSION HAZARDS			-	
Can form combustible mix flash spontaneously.	ctures with all when he		y 143 F. WITT NOT	
HAZARDOUS POLYMERIZATION	П., о.,	STABILITY	<b>D</b>	
Wiff Not Occur	May Occur	⊠ Stable	Unstable	
	V. HEALTH I	INFORMATION		
Possible effects include	e headache, nasal and re	espiratory irritatio	n, nausea, drowsine	s s <b>,</b>
Possible effects include	headache, nasal and re Imonary edema, central r	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	ss,
Possible effects include	e headache, nasal and re Imonary edema, central e	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	ss,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central r	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	s <b>s</b> ,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central e	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	ss,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central e	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	ss,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central r	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	s s ,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central i	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	s <b>s</b> ,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central e	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	SS,
Possible effects include fatigue, peumonitis, pu	e headache, nasal and re Imonary edema, central r	espiratory irritatio nervous system depre	n, nausea, drowsine ssion.	S S ,
Possible effects include fatigue, peumonitis, pu	lmonary edema, central r	nervous system depre	ssion.	SS,
Possible effects include fatigue, peumonitis, pu	lmonary edema, central r	nervous system depre	ssion.	SS,
Possible effects include fatigue, peumonitis, pu	lmonary edema, central r	nervous system depre	ssion.	SS,
Possible effects include fatigue, peumonitis, pu	lmonary edema, central r	nervous system depre	ssion.	SS,
Possible effects include fatigue, peumonitis, pui	lmonary edema, central r	nervous system depre	ssion.	SS,
Possible effects include fatigue, peumonitis, pu  EYE CONTACT  Irritation  EKIN CONTACT  Irritation, may cause de	ermatitis due to defatt	ing of keratin layer	ssion	

#### VI. FIRST AID PROCEDURES

INHA -ATION

Yove exposed person to fresh air. If breathing has stopped, perform artificial respiration. Let medical attention as soon as possible.

EYE CONTACT

Immediately flush eyes with water for a minimum of 15 minutes, occasionally lifting the lower and upper lids. Get medical attention as soon as possible.

SKIN CONTACT

If clothing soaked, immediately remove clothing and wash skin with soap and water. Launder clothing before wearing. Get medical attention promptly.

INGESTION

Do <u>not</u> induce vomiting. Get medical attention as soon as possible.

#### **VII. EMPLOYEE PROTECTION**

RESPIRATORY PROTECTION ( UTILIZE NIOSH APPROVED RESPIRATORS. REFER TO MANUFACTURER'S PROTECTION FACTORS AND OSMA STANDARD 1910.134. AS A GUIDELINE:)

Up to 500 ppm, half-mask organic vapor respirator. Up to 1000 ppm, full-face organic vapor respirator or full-face supplied air respirator. Greater than 1000 ppm, fire fighting, or unknown concentration, self-contained breathing apparatus with positive pressure.

S E	Chemical goggles, face shield.			
CLOT!	Gloves:	Nitrile, neoprene or other material resistant to naphtha solvent.		
INTILATION				

Maintain local or dilution ventilation to keep air concentration below 100 ppm. Loading, unloading, tank gauging, etc. remain upwind. Request assistance of safety and industrial hygiene personnel to determine air concentrations.

		VIII. TRANSPO	RTATION AND STORAG	E INFORMATIO	DN .
	Hazardous Material	No Petroleum naphtha	UN 1255	DOT HAZARD CLASS	* Combustible liquid
STORAG		· · · · · · · · · · · · · · · · · · ·			
		strong oxidizers.	Store as OSHA Clas	s IIIA combu	stible liquid.
			·		
		IX. EI	NVIRONMENTAL PROTE	CTION	
SPILLS	Build d	ike to contain flow	. Remove free liqu	id, do not f	emove ignition sources. lush to sewer or open container for disposal.
			EPA WASTE CODE NUM	pplicable	NOT Applicable
WASTE DISPOSAL	Utilize Utilize	licensed waste dis	posal company. Cons s waste disposal si	sider recycl te.	ing or incineration.
	ER'S SIGNATURE (PRODUCT	SAFETY AND COMPLIANCE) hing Corporation for Triangle Refir	neries Inc. C.L.R	Pussell	DATE PREPARED
Prepa		mig Corporation for Friangle Relif	ieriea, iliu.		3 /3 83

The information and recommendations contained in this publication have been compiled from sources believed to be reliable and to represent the best current opinion on the subject at the time of publication. Since we cannot anticipate or control the many different conditions under which this information or our products may be used, we make no guarantee that the recommendations will be adequate for all individuals or situations. Each user of the product described herein should determine the suitability of the described product for his particular purpose and should comply with all federal and state rules and regulations concerning the described product.

MATERIAL HEALTH A	AND	40 60
SAFETY BULLETIN	V Ive	$n^+$ $\left(1\right)$ $\left(0\right)$
Union Chemicals Division	501	$\times$ $\times$
Petrochemical Group  CERRO COPPER PRODUCTS C		$\checkmark$

No.:	CERRO COPP	ER FRODU	JCTS CUMPANY JPC-00-0225	<i>,</i>	
Product Code No: 1106	EAVISONE SAVISONE	4885265		UN No. 1256	5
MANUFACTURER'S NAME	347270: 347270: 3080-491N3:	==:::=:			
Union Chemicals	Division, Union Oil C				į
STREET ADDRESS	·				
1345 North Meac	ham Road				
CITY, STATE, AND ZIP CODE					
Schaumburg, Illin	ois 60196		Business Phone: (31	12) 885-5450	
EMERGENCY TELEPHONE NO.					
Transportation Health Emergencies Call Los Angeles Po	Emergencies call CHE ison Control Center (2				
PRODUCT: 140 Solvent 6	6/3	WARNING ST	ATEMENT:		
14000 Cales 33		17211111100			
COMMON NAME.			n Combustible		_
GENERIC NAME: Volatile Solv			induce vomit dustrial use	ing if swallo	wed.
CHEMICAL NAME: Not Applicabl		roi inc	austriar use	Only.	
HEMICAL FAMILY: Hydrocarbon M	ixture				
DOT PROPER SHIPPING NAME:					
Not Applicabl	e				
	Section 1 IN	I GREDIENT	S		
	TLV*			_bod_pododecodecodecodecodecodecodecodecodecod	TLV.
	<del></del>	1			
140 Solvent	37				
210 00270110		<u>.</u>			
		:			
				,	
'Threshold Limit Value A, OSHA	B, ACGIH	C. See Se	ection III 🔲 💮 I	D, Other [X]	ــــــــــــــــــــــــــــــــــــــ
, meaning Ellins Agree	o, nouin	J. 300 30	C	o, other M	ogie-

Suggested - Carnegie-Mellon

	Section II EMERGENCY AND FIRST AID PROCEDURES			
EMERGENCY: Have a physician call LOS ANGELES POISON CONTROL CENTER (24 hrs.) 213/664-2121				
Eye Contact	If this product comes in contact with the eyes, flush with large quantities of water for at least 15 minutes and seek immediate medical attention.			
Skin Contact	If this product comes in contact with the skin, wash with soap and large quantities of water. Seek medical attention if irritation from contact persists.			
Inhalation	If breathing difficulties, dizziness, or lightheadedness occur when working in areas with high vapor concentrations, victim should seek air free of vapors. If victim experiences continued breathing difficulties, administer oxygen until medical assistance can be rendered. If breathing stops, begin artificial respiration and seek immediate medical attention.			
Ingestion	If this product is swallowed, DO NOT induce vomiting. Seek immediate medical advice and/or attention.			

Section 111 PHYSIOLOGICAL EFFECTS AND HEALTH INFORMATION					
Eye Effects	This product may be an eye irritant.				
Skin Effects	This product may cause skin irritation upon prolonged or repeated contact.				
Systemic Effects	Various studies have shown a possible association with exposure to this product and the following:  Respiratory tract irritation.  Narcosis in high concentration.				

•	Section IV SPECIAL PI	ROTECTION IN	FORMATION
Respiratory Frotection (Specify Type)	The use of respiratory pro above the time-weighted TL respirator or gas mask.		ends on vapor concentration OSH approved cartridge
Ventilation	General mechanical ventilation may be suffice specified time-weighted TLV ranges. If generations, supplemental local exports concentrations, supplemental local exports as respiratory masks or environmental coases.	ral ventilation prov haust may be requir	res inadequate to maintain safe red. Other special precautions
Protective Gloves	The use of impermeable gloves is advised to prevent skin irritation in sensitive individuals.	Eye Protection	Safety glasses, chemical goggles and/or face shields are recommended to safeguard against potential eye contact, irritation, or injury.
Other Protective Equipment	Impermeable aprons are adv The availability of eye wa is recommended.		orking with this product. fety showers in work areas

			Section V REACTIVITY DATA		
Stability	Unstable		Conditions to Avoid:		
	Stable	x			
Incompatibility (Materials to Avoid)	This prod strong ox strong ac selected	idizi ids o	r bases		
Hazardous Decomposition Products			osition in the presence of air may yield carbon r carbon dioxide		
Hazardous Polymerization	May Occur		Conditions to Avoid:		
	Will Not Occur	_ x			

	HIGHWAY OR RAILWAY SPILLS - CALL CHEMTREC 800/424-9300
Precautions In Case of Release or Spill	Keep sources of ignition and hot metal surfaces isolated from the spill. Flush spilled material into suitable retaining areas or containers with large quantities of water. Small amounts of spilled material may be absorbed into an appropriate absorbant.
Reportable Quantity	Notify Coast Guard National Response Center; Phone No. 800-424-8802, If Spill Is Greater ThanIbs (Kilograms)
Waste Disposal Method	Dispose of product in accordance with applicable local, county, state and federal regulations.

	Section VII STORAGE AND SPECIAL PRECAUTIONS
Handling and Storing Precautions	Keep product containers cool, dry, and away from sources of ignition.  Use and store this product with adequate ventilation. (See Section IV.)
Other Precautions	Personnel should avoid inhalation of vapors. (See sections I, II, III, V, VI) Personal contact with the product should be avoided. Should contact be made, remove saturated clothing and flush affected areas with water. (See sections II, IV, VI)

	Section VIII FIRE AND EXPLOSION HAZARD DATA
DOT Flammability Classification	Combustible Liquid  Flash Point Range:  Below 20° F.  20° F. 100° F  100° F - 200° F  None to boiling
Extinguishing Media	Use foam, CO <sub>2</sub> or dry chemical fire fighting apparatus.
Unusual Fire and Explosion Hazards	Keep work areas free of hot metal surfaces and other sources of ignition.
Fire Fighting Procedures	The use of self-contained breathing apparatus is recommended for fire fighters. Water may be unsuitable as an extinguishing media, but helpful in keeping adjacent containers cool. Avoid spreading burning liquid with water used for cooling purposes.

		367° - 405°F	☐ Lighter	Than Air	
5	Evaporation Rate:	I han bithar		100%	
Heavier Than Water per Gallon: 6.50	Specific Gravity:	☑ Lighter Than Water ☐ Heavier	Weight per Gallon:	6.50	

	S	sction X DOCUMENTARY INFOR	MATION	
Product Code No.	1106	Issue Date 10/20/80	Prepared By	Paul Pfeifer
Replaces: UCD No.		Product Code No. 1106	issued	12/79
Reviewed By:	a. Lotten	Manager, Loss Prevention		
Reviewed By:	aine Bea	Director of Occupational Health & To	xicology	
Reviewed By:	reland to Sum	Science and Technology Division		

The above information is believed to be correct as of the date hereof. However, no warranty of merchantability, fitness for any use or any other warranty is expressed or is to be implied regarding the accurancy of these data, the results to be obtained from the use of the material, or the hazards connected with such use. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar, and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume responsibility for the results of its use. This information is furnished on the condition that the person receiving it shall make his own determination as to the suitability of the material for his particular purpose and on the condition that he assume the risk of his use thereof.



# MATERIAL SAFETY D. ENVIRONMENTAL (FRIGR)

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0226

PETROLITE CORPORATION 369 MARSHALL AVE.

REVISION DATE: 07/06/89

EMERGENCY PHONE: 1-314-961-3500 CHEMTREC EMER NO: 1-800-424-9300

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT: SPC2470

TRADE NAME: SPECTRUM

LABEL: 000

097

REPLACES VB-5160

ST.LOUIS MO 63119 U.S.A

SHIPPING NAME: NOT HAZARDOUS PER D.O.T. CFR TITLE 49

CHEMICAL DESCRIPTION

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE, 2-METHYL-4-

ISOTHIAZOLIN-3-ONE IN WATER.

SECTION 2 HAZARDOUS INGREDIENTS

CAS NUMBER

MATERIAL

%

EXPOSURE LIMITS

26172-55-4 5-chloro-2-methyl-4-isothiazolin-3-one

1.15 RECOM. 0.1 mg/M3

02682-20-4 2-methyl-4-isothiazolin-3-one .35 Not Established

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION 3 PHYSICAL DATA

SPECIFIC GRAVITY (H20 = 1.0@60 F): 1.026

VOLATILITY: N/A

VAPOR PRESSURE: Not Established

SOL. IN WATER: Soluble

MISC. DATA: pH = 3 - 5

APPEARANCE AND ODOR: Pale yellow to green liquid. Mild aromatic odor.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >200 F

FLAMMABLE LIMITS: Not Established

FLASH METHOD:

EXTINGUISHING MEDIA:

Use water spray or fog, alcohol-type foam, dry chemical

or CO2.

FIRE FIGHTING PROCEDURES:

Use a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode. Non-flammable. Keep fire-exposed containers cool using

water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None known.

\*\*\*CONTINUED ON PAGE: 2\*\*\*



PAGE 2

\*\*\*CONTINUATION OF SPC2470 \*\*\*

SECTION 5 HEALTH HAZARD DATA

## EFFECTS OF OVEREXPOSURE:

#### INHALATION:

Inhalation of mists, aerosols or very high vapor concentrations will produce intense eye, nose and respiratory irritation and may result in lung damage. Prolonged exposure may result in chemical pneumonitis and, in extreme cases, pulmonary edema.

INHALATION LC50: >13.7 mg/L (Rat)

PAGE 3

\*\*\*CONTINUATION OF SPC2470 \*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 6 REACTIVITY DATA

STABILITY:

Stable under normal conditions of storage and use.

INCOMPATIBILITY:

Keep away from strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Oxides of sulfur and nitrogen. HCl.

HAZARDOUS POLYMERIZATION:

Will not occur.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 7 SPILL AND LEAK PROCEDURES

IF MATERIAL IS SPILLED OR RELEASED:

Dike and absorb spill using hypochlorite solution\* in combination with inert material (dry sand, earth etc.) and transfer to suitable containers for disposal.

\*Recommended formulation: 8 lbs. calcium hypochlorite (HTH 65% active ingredient), 5 lbs. sodium hydroxide 50% and 77 lbs. water. Sodium hydroxide must be added to maintain alkalinity and prevent the evolution of chlorine gas.

DISPOSAL METHOD:

This product is a registered industrial antimicrobal product. Please refer to product label for disposal instructions.

**DECONTAMINATION PROCEDURES:** 

Not appropriate.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 8 SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

When ventilation is not adequate, use of a NIOSH-approved dust, mist and fume respirator is recommended. In emergency situations, the use of a self-contained breathing unit may be necessary.

**VENTILATION:** 

General ventilation should be provided to maintain ambient concentrations below nuisance levels. Local ventilation of emission sources may be necessary.

\*\*\*CONTINUED ON PAGE: 4\*\*\*



PAGE 4

\*\*\*CONTINUATION OF SPC2470 \*\*\*

#### PROTECTIVE CLOTHING:

Chemical-resistant gloves and chemical goggles, face shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

SECTION 9 SPECIAL PRECAUTIONS

Avoid breathing of vapors and contact with eyes, skin or clothing. Hazardous product residue may remain in emptied container. Do not reuse container without commercial cleaning or reconditioning.

This product is a registered industrial antimicrobal product. Please refer to the product label for drum cleaning instructions.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Although the information and recommendations set forth herein are believed to be correct as of the date hereof, Petrolite makes no representations to the accuracy of such information and recommendations. It is the user's responsibility to determine the suitability and completeness of such information and recommendation for its own particular use. Petrolite shall not be responsible for any direct, indirect, incidental or consequential damages of whatsoever nature resulting from the publication, use of

or reliance upon such information and recommendations.

PETROLITE EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES OF EVERY KIND AND NATURE INCLUDING THOSE OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCT, THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN, OR ANY USE OR RELIANCE THEREON.



## **ENVIRONMENTAL DATA SHEET**

PAGE

PETROLITE CORPORATION
369 MARSHALL AVE.
ST. LOUIS MO 63119 U.S.A.

REVISION DATE: 08/26/91 EMERGENCY PHONE: 1-314-961-3500 CHEMTREC EMER NO: 1-800-424-9300

#### SPC2470

#### SARA TITLE III, SECTION 313

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

This notification is incorporated into the Material Safety Data Sheet (MSDS) for the Petrolite product named above. When physically attached to the MSDS, this notification must not be detached from the MSDS. Any copying and redistribution of the MSDS to which this notification is attached must include copying and redistribution of this notification.

This Petrolite product contains no toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 in excess of the applicable de minimis concentration.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## CARPENTER TECHNOLOGY CORPORATION

## MATFRIAI

**GENERAL OFFICES:** P.O. BOX 14662 READING, PA 19612-4662

CERRO COPPER PRECUCTS DIV CERRO CORP P O BOX 681 EAST ST LOUIS IL

62202

PRODUCTS COMPANY CERRO COPPER CCPC-00-0228 NUMBER

ENVIRONMENTAL:

THE INFURNATION SET FURTH UN THIS MATERIAL SAFETY DATA SHEET IS BELIEVED TO BE ACCURATE, AS OF THE REVISION DATE, CARPENTER TECHNOLOGY CORPO-BATION MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON. NO EITHER EXPRESS OR IMPLIED OF MERCHANTA-BILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE MATERIAL OR DATA HEREIN IS MADE HEREUNDER.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT THE HEALTH AND SAFETY DEPARTMENT AT: 215-371-2000.

#### SECTION I - PRODUCT IDENTIFICATION

PRODUCT DESCRIPTION:

CARPENTER STAINLESS TYPE 304 PROJECT 70

DARK BLUE PAINT

		SECTION II - HAZARDOUS INGREDIENTS
INGREDIENTS	%	PEL / TLV 8 HOUR TWA UNLESS OTHERWISE NOTED
# 1309 - 37 - 1 CHROMIUM 7440 - 47 - 3 NICKEL 7440 - 02 - 0 MANG ANE SE 7439 - 96 - 5 COBALT 7440 - 48 - 4 COPPER 0 - 50 - 8 N T S B D E N UM 7439 - 98 - 7	18.20 8.20 1.70 .70 .70	TLV 0.1 MG/M3 PEL 0.1 MG/M3 (FUME) 1.0 MG/M3 (DUST/MIST) TLV 0.2 MG/M3 (FUME) 1.0 MG/M3 (DUST/MIST)
and the second second	ا عدقہ دار	nder <del>Waxa</del> wa ang mga <mark>wang dawa</mark> ar <del>i sa pangrahan na mga mga mga mga mga mga mga mga mga mg</del>
		* - THESE SUBSTANCES ARE REGULATED IN THEIR OXIDE FORM

THE ABOVE PERCENT CONCENTRATIONS ARE CONSIDERED NOMINAL AND ARE PROVIDED FOR INDUSTRIAL HYGIENE PURPOSES. THEY DO NOT REPRESENT A CERTIFICATION OF CONTENT.

#### **SECTION III - PHYSICAL DATA**

BOILING PT.: HIGH MELTING PT.: 2400 to 2800 F SPECIFIC GRAVITY: 7.5 to 8.5 VAPOR DENSITY: NIL SOLUBILITY IN WATER: INSOLUBLE

VAPOR PRESSURE: NIL

APPEARANCE AND ODOR: SOLID, ODORLESS METAL

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

UNLESS OTHERWISE NOTED, NONE. PRODUCT IS A SOLID METAL.

#### SECTION V - HEALTH HAZARD DATA

SPECIALTY STEEL ALLOYS ARE GENERALLY NOT CONSIDERED HAZARDOUS IN THE FORM SHIPPED (SOLID BARS, BILLETS, RODS, WIRE, ETC.), HOWEVER, IF YOUR PROCESS INVOLVES GRINDING, MELTING, WELDING, CUTTING, OR ANY OTHER PROCESS THAT CAUSES A RELEASE OF DUST OR FUME, HAZARDOUS LEVELS OF DUST OR FUME OF THE CONSTITUENTS OF THESE ALLOYS COULD BE GENERATED. THE FOLLOWING IS A LIST OF POTENTIAL HEALTH EFFECTS FOR ALL HAZARDOUS ELEMENTS THAT ARE POSSIBLY CONTAINED IN ANY OF OUR ALLOYS. PLEASE REFER TO SECTION II TITLED "HAZARDOUS INGREDIENTS" FOR A LIST OF THOSE SPECIFIC ELEMENTS CONTAINED IN THIS PARTICULAR ALLOY.

#### **HEALTH EFFECTS:**

- \*ALUMINUM: METAL DUST AND OXIDE IS GENERALLY CONSIDERED A "NUISANCE" PARTICULATE. MAY CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN EXCESSIVE CONCENTRATIONS.
- \*BERYLLIUM: CAN CAUSE DERMATITIS, ALSO CAUSES A SEVERE CHRONIC LUNG DISEASE KNOWN AS "CHRONIC BERYLLIUM DISEASE" WHICH IS OFTEN FATAL

'RON OXIDE: HAS CAUSED IRRITATION OF THE EYES, NOSE, AND SKIN OF EXPERIMENTAL ANIMALS. IT MAY HAVE THE SAME EFFECT ON HUMANS JAROMIUM: FERROCHROME ALLOYS HAVE BEEN ASSOCIATED WITH LUNG CHANGES IN WORKERS EXPOSED TO THESE ALLOYS.

COBALT: FUME OR DUST CAUSES IRRITATION OF THE NOSE AND THROAT AND MAY CAUSE AN ALLERGIC SKIN RASH. ALSO HAS BEEN REPORTED TO CAUSE RESPIRATORY DISEASE WITH SYMPTOMS RANGING FROM COUGH AND SHORTNESS OF BREATH TO PERMANENT DISABILITY AND DEATH. THE SYMPTOMS FREQUENTLY GO AWAY WHEN EXPOSURE HAS STOPPED, BUT SOMETIMES THE SYMPTOMS PROGRESS AFTER EXPOSURE HAS CEASED.

COLUMBIUM (NIOBIUM): IS EXPECTED TO HAVE SIMILIAR EFFECTS TO TANTALUM.

COPPER: FUME OR DUST CAUSES IRRITATION OF THE EYES, NOSE, AND THROAT AND A FLU-LIKE ILLNESS CALLED METAL FUME FEVER. SYMPTOMS INCLUDE FEVER, MUSCLE ACHES, NAUSEA. CHILLS, DRY THROAT, COUGH, WEAKNESS, AND SWEET OR METALLIC TASTE IN THE MOUTH.

#### SECTION V - HEALTH HAZARD DATA (CONTINUED)

HAFNIUM: HAFNIUM SALTS HAVE CAUSED IRRITATION OF THE EYES AND SKIN IN EXPERIMENTAL ANIMALS. OTHER HAFNIUM COMPOUNDS HAVE CAUSED LIVER DAMAGE IN ANIMALS ON PROLONGED FEEDING.

IRON OXIDE: REPEATED EXPOSURE TO IRON OXIDE FUME OVER A PERIOD OF YEARS MAY CAUSE X-RAY CHANGES OF THE LUNGS, BUT DOES NOT CAUSE THE EXPOSED PERSON TO BECOME ILL.

MANGANESE: INHALATION OF MANGANESE FUME MAY CAUSE "METAL FUME FEVER" WITH SYMPTOMS OF CHILLS, FEVER, NAUSEA, COUGH. DRY THROAT, WEAKNESS, MUSCLE ACHES, AND A SWEET OR METALLIC TASTE IN THE MOUTH. PROLONGED OR REPEATED EXPOSURE MAY AFFECT THE NERVOUS SYSTEM, WITH DIFFICULTY IN WALKING AND BALANCING, WEAKNESS OR CRAMPS IN THE LEGS, HOARSENESS OF THE VOICE, TROUBLE WITH MEMORY OR JUDGEMENT. UNSTABLE EMOTIONS OP UNUSUAL IRRITABILITY. THE RESPIRATORY SYSTEM MAY ALSO BE AFFECTED BY A PNEUMONIA LIKE ILLNESS WITH SYMPTOMS OF COUGHING. FEVER, CHILLS, BODY ACFUREST PAIN AND OTHER COMMON SIGNS OF PNEUMONIA.

MOLYBDENUM: OXIDES OF MOLYBDENUM HAVE CAUSED IRRITATION OF THE EYES, NOSE, AND THROAT, WEIGHT LOSS, AND DIGESTIVE DISTURBANCES IN EXPERIMENTAL ANIMALS.

NICKEL: FUMES ARE RESPIRATORY IRRITANTS AND MAY CAUSE RESPIRATORY DISEASE. SKIN CONTACT CAN ALSO CAUSE AN ALLERGIC SKIN RASH, NICKEL AND ITS COMPOUNDS HAVE BEEN REPORTED TO CAUSE CANCER OF THE LUNGS AND SINUSES.

TANTALUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY BUT HAS PRODUCED TRANSIENT LESIONS OF THE LUNGS IN EXPERIMENTAL ANIMALS TIN: GENERALLY CONSIDERED TO EXHIBIT A LOW ORDER OF TOXICITY. MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT AND SKIN.

THE GENERALLY CONSIDERED TO EXHIBIT A LOW ORDER OF TOXICITY, MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT AND SKIN.

TITANIUM DIOXIDE: CONSIDERED TO BE A "NUISANCE" PARTICULATE. CAN CAUSE IRRITATION OF THE EYES, NOSE, AND THROAT IN HIGH CONCENTRATIONS. SLIGHT LUNG CHANGES MAY OCCUR.

\* TUNGSTEN: METAL AND INSOLUBLE COMPOUNDS ARE GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY, BUT HAVE PRODUCED LUNG CHANGES IN EXPERIMENTAL ANIMALS.

VANADIUM PENTOXIDE: DUST AND FUME MAY CAUSE IRRITATION OF THE EYES, NOSE, THROAT, AND RESPIRATORY TRACT. IT MAY ALSO CAUSE BRONCHITIS WITH WHEEZING AND CHEST PAIN. A GREENISH DISCOLORATION OF THE TONGUE MAY OCCUR. AFTER SYMPTOMS HAVE OCCURRED FOLLOWING INITIAL EXPOSURE, REPEATED EXPOSURE MAY CAUSE MORE SEVERE SYMPTOMS OF THE SAME NATURE. REPEATED EXPOSURES MAY CAUSE CHRONIC BRONCHITIS, OR ALLERGIC SKIN RASH.

ZIRCONIUM: GENERALLY CONSIDERED TO HAVE A LOW ORDER OF TOXICITY. SKIN RASH HAS BEEN REPORTED FROM EXPOSURE TO ZIRCONIUM CONTAINING DEODORANTS.
REFERENCES: HEALTH HAZARD DATA FOR THE ELEMENTS MARKED WITH AN (\*) WAS TAKEN FROM ACGIH'S <u>DOCUMENTATION OF TLV'S</u>. HEALTH HAZARD DATA FOR THE REMAINING ELEMENTS WAS TAKEN FROM THE NIOSH / OSHA <u>OCCUPATIONAL HEALTH GUIDELINES FOR CHEMICAL HAZARDS</u>. FOR ADDITIONAL SOURCES OF INFORMATION ON POTENTIAL HEALTH EFFECTS OF THESE SUBSTANCES, PLEASE REFER TO OSHA'S HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) APPENDIX C.

CARCINOGENIC REFERÊNCES; CHROMIUM. COBALT-CHROMIUM ALLOYS, AND NICKEL HAVE BEEN IDENTIFIED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) AND / OR THE NATIONAL TOXICOLOGY PROGRAM (NTP) AS POTENTIAL CANCER CAUSING AGENTS.

#### **EXPOSURE ROUTES:**

EXPOSURE TO SPECIALTY STEEL ALLOYS OCCURS PRIMARILY FROM INHALATION OF DUST OR FUMES. HOWEVER, CONSTITUENTS OF THESE ALLOYS MAY CAUSE EFFECTS DIRECTLY UPON THE SKIN OR EYES. CERTAIN CONSTITUENTS MAY ALSO BE HARMFUL IF SWALLOWED.

#### FIRST AID:

INHALATION - MOVE PERSON TO FRESH AIR UNTIL RECOVERED, CONSULT A PHYSICIAN.

SKIN - WASH WITH WATER AND MILD DETERGENT, CONSULT A PHYSICIAN.

EYE - FLUSH THOROUGHLY WITH WATER. CONSULT A PHYSICIAN.

INGESTION - WHILE INGESTION OF LARGE ENOUGH QUANTITIES TO CAUSE HEALTH EFFECTS IS UNLIKELY, CONSULT A PHYSICIAN IF IT OCCURS

#### AGGRAVATED CONDITIONS

MEDICAL CONDITIONS, THAT ARE RECOGNIZED AS BEING POSSIBLY SUSCEPTIBLE TO AGGRAVATION BY EXPOSURE, INCLUDE — PRE-EXISTING CHRONIC SKIN, EYE, OR RESPIRATORY DISORDERS IF PROLONGED OR REPEATED OVEREXPOSURE TO FUME AND DUST OCCUR.

#### **SECTION VI - REACTIVITY**

STABILITY: STABLE

HAZARDOUS DECOMPOSITION: NONE POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBLE MATERIALS: NONE

#### SECTION VII - SPILL OR LEAK PROCEDURES

PRODUCT IS A SOLID METAL AS SHIPPED. NO POTENTIAL FOR SPILL OR LEAK.

#### **SECTION VIII - SPECIAL PROTECTION INFORMATION**

#### VENTILATION:

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME, USE LOCAL AND GENERAL EXHAUST VENTILATION TO KEEP AIRBORN CONCENTRATIONS OF DUST OR FUMES BELOW THE TLV.

#### RESPIRATORY PROTECTION:

IF YOUR PROCESS CAUSES A RELEASE OF DUST OR FUME IN EXCESS OF THE PERMISSIBLE EXPOSURE LIMIT, NIOSH APPROVED RESPIRATORS FOR PROTECTION AGAINST AIRBORN DUST OR FUMES SHOULD BE WORN. RESPIRATORS SHOULD BE USED IN ACCORDANCE WITH 29CFR 1910,134.

#### PROTECTIVE EQUIPMENT:

GLOVES AND BARRIER CREAMS MAY BE NECESSARY TO PREVENT SKIN SENSITIZATION AND DERMATITIS, IF YOUR PROCESS INVOLVES GRINDING OR ANY OTHER ACTION THAT CAUSES THE RELEASE OF DUST OR FUMES, APPROVED SAFETY GLASSES OR GOGGLES SHOULD BE WORN.

#### **SECTION IX - SPECIAL PRECAUTIONS**

NONE

#### **SECTION X - ADDENDUM**

#### SARA TITLE III REQUIREMENTS

THE PRODUCT DESCRIPTION OR TRADE NAME CONTAINS TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS UNDER SECTION 313 OF TITLE III "THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

TOXIC CHEMICALS MAY INCLUDE CHROMIUM, NICKEL, MANGANESE, COBALT, COPPER, VANADIUM, TITANIUM, OR ALUMINUM (REFER TO SECTION II OF THE MSDS F SPECIFIC HAZARDOUS INGREDIENTS).

#### PROPOSITION 65 COMPLIANCE

PROPOSITION 65 "THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986" PROHIBITS "ANY PERSON IN THE COURSE OF DOING BUSINESS FROM KNOWINGLY AND INTENTIONALLY EXPOSING ANY INDIVIDUAL TO A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY WITHOUT FIRST GIVING CLEAR AND REASONABLE WARNING TO SUCH INDIVIDUALS."

SPECIALTY STEEL ALLOYS, IN THE FORM IN WHICH THEY ARE SHIPPED. DO NOT POSE A THREAT TO OUR CUSTOMERS; HOWEVER, THE "GOVERNOR'S LIST OF CHEMICALS KNOWN TO CAUSE CANCER OR REPRODUCTIVE TOXICITY" DOES INCLUDE TWO CHEMICALS IDENTIFIED AS CARCINOGENS WHICH MAY BE PRESENT UNDER CERTAIN CONDITIONS. THEY ARE CHROMIUM (HEXAVALENT COMPOUNDS) AND NICKEL REFINERY DUST FROM PYROMETALLURGICAL PROCESSING.

IN ORDER FOR A CHEMICAL EXPOSURE TO OCCUR, OUR ALLOYS MUST BE SUBJECTED TO HIGH HEAT APPLICATIONS IN OXYGEN RICH ATMOSPHERES. REPRESENTATIVE OPERATIONS WOULD INCLUDE TORCH CUTTING OR WELDING.



"OSHA, 1976

AGGIH, 1977

## MATE

# CERRO COPPER PRODUCTS COMPANY HSDS NUMBER - CCPC-00-0229

	ALVI ROMMEN		
	47ET):		
ON 1 — Identification		·	
Product Name Statex MRG		Manufacturer's Name	Columbian Chemicals Co.
Chemical Name Oil Beaded		Manufacturer's Address	P.O. Box 37
Carbon Black .	<del></del>		Tulsa, OK 74102
Chemical Family Carbon	•	Position or Department	Safety & Environmental
CAS No.: 1333-86-4	— HMIS	Telephone Number	(918) 744-4594
TSCA Inventory: Vol. 1, Page 90			
ON 2 — Hazard Rating		· ·	
Hazard Classification: Health 0	$\overline{}$	Flammability 1	Reactivity0
Composition: Component	(	Concentration	Criterion and Value
Carbon		60%	3.5 mg/m³ (Dust)*
Naphthenic Oil	*	40%	
D.O.T. Hazard: Non-hazardous carbon	black is lis		1000 Table Z-1
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA	cific Gravit Vapor Der	y (Water = 1) $\frac{1.7-1.9}{NA}$	Evaporation Rate ( =1) NA
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat	ecific Gravit Vapor Der Air No	y (Water = 1) <u>1.7-1.9</u> nsity (Air = 1) <u>NA</u> Heat <u>No</u> Wate	Evaporation Rate ( =1) <u>NA</u> r <u>No</u> Strong Oxidizer <u>N</u>
Vapor Pressure (mm Hg) NA  Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat  Flash Point (°F) NA  Autoignition	ecific Gravit Vapor Der Air No	y (Water = 1) $\frac{1.7-1.9}{NA}$	Evaporation Rate ( =1) <u>NA</u> r <u>No</u> Strong Oxidizer <u>M</u>
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat Flash Point (°F) NA Autoignition Extinguishing Media Water spray	vapor Der Vapor Der Air No a ta Temp. (°F)	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat No Wate  Ignition in air above 500°	Evaporation Rate ( =1) <u>NA</u> r <u>No</u> Strong Oxidizer <u>M</u> E LEL (%) <u>NA</u> UEL (%)
Reacts if Exposed to: Light No ON 4 — Fire or Explosion Dat	vapor Der Air No  a Temp. (°F)  nal fog or no	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat NO Wate  June 1 J	Evaporation Rate ( =1) NA  r_No Strong Oxidizer_M  E LEL (%) NA UEL (%)  exclusion of air.  on dioxide are emitted. It may
Vapor Pressure (mm Hg) NA  Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat  Flash Point (°F) NA Autoignition  Extinguishing Media Water spray  Special Firefighting Procedure Norm  Unusual Fire or Explosion Protection obvious that carbon black is burning un  ON 5 — Health Data	cific Gravit Vapor Der Air No  a n Temp. (°F)  nal fog or no None — nless it is st	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat No Water  Ignition in air above 500°.  Description monoxide and carboirred and sparks are appared.	Evaporation Rate ( =1) NA  r No Strong Oxidizer M  E LEL (%) NA UEL (%)  exclusion of air.  on dioxide are emitted. It may ent.
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat Flash Point (°F) NA Autoignition Extinguishing Media Water spray  Special Firefighting Procedure Norm Unusual Fire or Explosion Protection obvious that carbon black is burning un  ON 5 — Health Data	cific Gravit Vapor Der Air No  a n Temp. (°F)  nal fog or no None — nless it is st	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat No Water  Ignition in air above 500°.  Description monoxide and carboirred and sparks are appared.	Evaporation Rate ( =1) NA  r No Strong Oxidizer M  E LEL (%) NA UEL (%)  exclusion of air.  on dioxide are emitted. It may ent.
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat Flash Point (°F) NA Autoignition Extinguishing Media Water spray  Special Firefighting Procedure Norm Unusual Fire or Explosion Protection obvious that carbon black is burning un  ON 5 — Health Data  Effects of Overexposure: Acute: May the Permissible Exposure Limit.	cific Gravit Vapor Der Air No  a n Temp. (°F)  nal fog or no None — nless it is st	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat No Water  Ignition in air above 500°.  Description monoxide and carboirred and sparks are apparents.  Support of the suppor	Evaporation Rate ( =1) NA  r No Strong Oxidizer M  E LEL (%) NA UEL (%)  exclusion of air.  on dioxide are emitted. It may ent.
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat Flash Point (°F) NA Autoignition Extinguishing Media Water spray  Special Firefighting Procedure Norm Unusual Fire or Explosion Protection obvious that carbon black is burning un  ON 5 — Health Data  Effects of Overexposure: Acute: May	cific Gravit Vapor Der Air No  ta  n Temp. (°F)  nal fog or no  None —  nless it is st	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat NO Water  Ignition in air above 500°  Description and/or  Carbon monoxide and carbeirred and sparks are appared  apporary discomfort due to inches a discompleted points of adsorbed points.	Evaporation Rate ( =1) NA  r No Strong Oxidizer M  Exclusion of air.  on dioxide are emitted. It may bent.  Inhalation of dust concentration  olynuclear aromatic compounds of
Boiling Point (°F) NA Spe Vapor Pressure (mm Hg) NA Reacts if Exposed to: Light No  ON 4 — Fire or Explosion Dat Flash Point (°F) NA Autoignition Extinguishing Media Water spray  Special Firefighting Procedure Norm Unusual Fire or Explosion Protection obvious that carbon black is burning un  ON 5 — Health Data  Effects of Overexposure: Acute: May the Permissible Exposure Limit. Chronic: None recognized. Carbon black	cific Gravit Vapor Der Air No  a Temp. (°F)  nal fog or no None — nless it is st carcinogens	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat NO Water  Ignition in air above 500°  Description and/or  Carbon monoxide and carborized and sparks are appared and sparks are appared and sparks are amounts of adsorbed poin certain animal studies. No	ELEL (%) NA UEL (%)  exclusion of air.  on dioxide are emitted. It may tent.  onhalation of dust concentration  olynuclear aromatic compounds (lo carcinogenic effect has been
Boiling Point (°F) NA Special Firefighting Procedure Normal Special Fi	cific Gravit Vapor Der Air No  a  Temp. (°F)  nal fog or no  None — nless it is st  carcinogens carbon blace	y (Water = 1) 1.7-1.9  nsity (Air = 1) NA  Heat NO Water  Description in air above 500°.  Carbon monoxide and carborized and sparks are appared and sparks are a	Evaporation Rate ( =1) NA  r No Strong Oxidizer M  Exclusion of air.  On dioxide are emitted. It may eart.  Inhalation of dust concentration  Olynuclear aromatic compounds of the carcinogenic effect has been in NTP Annual Report on Carcinogenic

NA = Not Applicable

		and First Aid P				
	Ingestio	n No conseque	ences.			
	Inhalatio	n Remove from	n exposure.			
	Skin _^	lormal washing	with soap a	nd water.		
		nse with water.				
	Irritant: Skin	<u>No</u>		Eye <u>No</u>	Inhalati	on_ <i>No</i>
			ė			
SECT	TION 6 - R	eactivity				
	Stable Yes		Unsta	ble	Conditions to A	Avoid
	incompatibil	ity NA				
			···			
	Hazardous D	ecomposition	Products _	Carbon monoxide	and carbon dioxide when b	urning.
		Polymerization:	No_X	Yes	Conditions to Avoid	Excessive heat and strong
		h as chlorates,				
	Corrosive:	No	Yes	Materials		· · · · · · · · · · · · · · · · · · ·
SECT	TION 7 S	pills and Lea	ake			
<b></b>		-			16	and with maken and antique is
	Steps to be	Taken in Case	Material is	Released or Spill	ed <u>vacuum, sweep or spr</u>	ay with water and collect in
	suitable cont	ainer.				
			Punt of	hura in accordant	as with local state and fode	ral regulations Carbon bl
	Waste Dispo is not a haza	sal Precautions	Buly, UI	Duni in accordant	ce with local, state and fede	rai regulations. Carbon bic
	is not a naza	ildous waste.				
cĖ	TION 9 . S	pecial Prote	otion			
SECI	1014 6 — 3	peciai riote				
	Respirators:	No	Yes <u>X_</u>	Type	Dust mask above TLV	
						mental Industrial Hygienists in
	the current e	dition of "Indus	trial Ventilati	on," considering t	he ILV.	
				A 1.		d water
	Gloves Nor			Other	ormal washing with soap and	d water.
	Eye Protection	on <u>Safety glass</u>	es	<del></del>	· · · · · · · · · · · · · · · · · · ·	
^=~	TION O					
SECI		pecial Preca				
	Handling and	d Storage <u>Kee</u>	p in closed	containers.		
	DOT Hazard	Label Required	i: No <u>X</u>	Yes	Specify	
		74	for CO and	O holosa astas =	no into alocad star-as tastis	una appropriate receivate
	Other Precau					<ul> <li>use appropriate respirator content if test results indicate.</li> </ul>
	or air line for p	DUSSIDIE EXPOSUI	e lu carbon l	nonoxid <b>e,</b> cardon c	ioxide and inadequate oxygel	i coment ii test results indicate.
		·	<del></del>			

The suggestions and data provided herewith are based upon tests and information which we believe to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained therein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

LUW HLLOY

#### SAFETY DATA MATERIAL

NATIONAL FORGE COMPANY PAGE (1)

Erie, Pa.

Irvine, Pa.

Erie Emergency Phone 814-452-2300

NE50002 SDS ID #

1. IDENTIFICATION

16512

16329

Irvine Emergency Phone 814-563-7522

Original issue date: 04/16/87 Revised:

NEPA

HEALTH: 3

Product Name: Low Alloy Steel Grades

(b) (d)

H M I S PERSONAL PROTECTION:

LABEL FLAMMABILITY: 0 DOT Instructions: N/A

Other (c)

Ingredients

2. INGREDIENTS AND HAZARDS

CAS NO. PEL INGREDIENT HAZARD DATA

a. CHROMIUM 7440-47-3 1 MG/M3 .05 MG/M3 313 CANCER, GASTROINTEST. LIVER: LEUKEMIA

b. NICKEL 7440-02-0 1 MG/M3 1 MG/M3 186 CANCER, LUNG & NASAL

REACTIVITY: 0

c. MANGANESE 7439-96-5 5 MG/M3 1 MG/M3 312 EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG

d. COPPER (AS DUST/MIST/FUME) 7440-50-8 1 MG/M3 .2MG/M3 349 EFF: LUNGS & GASTROINTESTINAL

e. IRON 7439-89-6 10 MG/M3 5 MG/M3 151 EFFECTS LUNGS

f. CARBON 7440-44-0 15 MG/M3 10 MG/M3 243 NUISANCE PARTICULATES, VAPORS, OR GASES

g. SELICON 4770-21-3 15 MG/M3 10 MG/M3 243 NUISANCE PARTICULATES, VAPORS, OR GASES

h.

1.

ĸ. 1.

m.

3. PHYSICAL DATA

Boiling (F) N/A (C) N/A Vap. Pres.(mm Hg) N/A Spec. Grav. (H20=1) 7.7 Evap. Rate( =1) N/A Freezing (F) N/A (C) N/A Vap. Dens.( =1) N/A Volitale by Vol. N/A % Soluble ? N/A

Appearance and Odor: METALLIC ODORLESS, SOLID

4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (method used) N/A Flammable Limits (LEL) N/A % (UEL) N/A % Auto-ign. Temp. 1292 DEG

Extinguishing Med. 1118 DOES NOT APPLY

Special Procedure 2062 Use that which is appropriate for the surrounding fire conditions. Use full protective clothing and

self-contained breathing equipment.

3031 N/A Unusual Hazard

Information contained in this MSDS is believed to be correct as it was obtained from sources we believe are reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy. User assumes all risk and liability of any use, processing or handling of any material. Hazards connected with the use are solely the users responsibility.

PAGE 1

PAGE (2)

MSDS ID # \*\*\*\*NF50002

Product: Low Alloy Steel Grades

#### 5. HEALTH HAZARD DATA

Overexposure RESPIRATORY IRRITATION, MAY CAUSE PNEUMONITIS (SIDEROSIS), GIDDINESS, NAUSEA, HEADACHE, DIZZINESS, DYPSNEA
Symptoms METAL FUME FEVER.

and

Elfects. DELAYED SYMPTOMS 12 TO 36 HOURS - DYPSNEA RETURNS, BLUE COLOR OF SKIN, FEVER DELIRIOUS, DEATH MAY OCCUR.

CHROMIUM AND CERTAIN CHROMIUM COMPOUNDS ARE LISTED AS CARCINOGENIC BY NTP AND IARC. NICKEL IS LISTED AS A SUSPECTED CARCINOGEN BY NTP AND IARC.

Routes of entry 6108 Inhalation, Ingestion, Skin and/or Eye Contact.

EMERGENCY & 7020 INHALATION: Contact physician. Restore or support breathing, keep warm and at rest.

FIRST AID 7027 INGESTION: Give water to dilute. Induce vomiting.

PROCEDURES 7001 EYE CONTACT; immediately flush with water for 15 minutes including under the eyelids. Get medical help. 7004 SKIN CONTACT: Wash area with soap and water. Immediately remove soiled clothing.

AGGRAVATED MAY CAUSE SIGNS OF PNEUMONIA, MAY BECOME SENSITIZED, MAY CAUSE DECREASED LUNG FUNCTION AND PROGRESSIVE MEDICAL DYSPNEA, MAY CAUSE X-RAY CHANGES OF LUNG. CHRONIC RESPIRATORY DISEASE, LIVER, KIDNEY, SKIN DISEASE, CONDITIONS HEMATOPOIETIC DISORDERS.

#### 6. REACTIVITY DATA

Incompatability STRONG OXIDIZERS MAY CAUSE FIRE AND EXPLOSIONS (IRON OXIDE FUME CONTACTING CALCIUM HYPOCHLORITE) STRONG (Material to avoid) ACIDS, SULFUR, ACETYLENE GAS, MAGNESIUM.

Hazardous Decompo- TOXIC GASES, FLAMMABLE AND EXPLOSIVE HYDROGEN GAS. WELDING MAY CREATE TOXIC FUMES (CHROMIUM OXIDE).
sition Products COPPER ACETYLIOES (SHOCK SENSITIVE) HYDROGEN GAS.

May Hazardous Polymerization Occur? NO \* AVOID \* NONE LISTED

7. SPILL OR LEAK PROCEDURES CHEMTREC TELEPHONE # 800-424-9300 COAST GUARD TELEPHONE # 800-424-8802

Steps in case NORMAL CLEAN UP PROCEDURES. USE GOOD HOUSEKEEPING PRACTICE. WEAR APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AS REQUIRED.

Materials NONE LISTED

released

Waste disposal 9045 Consider possible reclaim value, dispose of contamiated material in accordance with method applicable local, state, and federal laws.

#### 8. SPECIAL PROTECTION INFORMATION

Respiratory: IF TLV/FEL EXCEEDED: USE NIOSH/MSHA APPROVED RESPIRATOR

Gloves: RECOMMENDED Eye and Face: SAFETY SHIELD/SAFETY GLASSES

Other: CONTAMINATED CLOTHING SHOULD BE REMOVED AND CLEANED OR DISCARDED.

Ventilation: LOCAL TO MAINTAIN AIR QUALITY

#### 9. SPECIAL PRECAUTIONS

Handling and Use good housekeeping techniques to keep dust deposits in the workplace at a minimum. storage

Other USE GOOD HYGENIC PRACTICES. DO NOT EAT, DRINK, OR SMOKE IN AREA WHERE DUST OR FUMES ARE GENERATED.

•		
**	****	***
*	•	*
*	PRODUCT NAME MSDS#	*
	Low Alloy Steel Grades NF50002	*
	Low Alloy Sceek Stades	*
•	N F P A LABEL FLAM 0 HLTH 3 REACT 0	*
*	(Ingredients & Hazards)	*
*	a. CHROMIUM	*
*	CANCER, GASTROINTEST. LIVER: LEUKEMIA	*
*	****	*
*	b. NICKEL	*
		_
*	CANCER, LUNG & NASAL	
*		*
*	c. MANGANESE	*
*	EFF KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG	*
*		*
*	d. COPPER (AS DUST/MIST/FUME)	*
_		_
*	EFF: LUNGS & GASTROINTESTINAL	-
*		*
Ħ	e. IRON	*
*	EFFECTS LUNGS	*
*		*
*	NATIONAL FORGE	*
-	Erie, Pa. Irvine, Pa.	-
*	16512 16329	*
*	814-452-2300 814-563-7522	*
**	************	***
**	***	***
**	*****************	***
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**	RODUCT NAME MSDS#	*
**		*
**	RODUCT NAME MSDS#	*
**	RODUCT NAME MSDS#	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards) a. CHROMIUM	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards) a. CHROMIUM	*
*	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards) a. CHROMIUM	*
*	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA	*
* * * * * * * *	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards) a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA	*
* * * * * * * *	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL	*
* * * * * * * * * * *	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE	*
* * * * * * * * * * *	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG	*
* * * * * * * * * * *	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE	*
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* ***	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)	*
* ****	RODUCT NAME MSDS# Low Alloy Steel Grades NF50002  NFPA LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL	*
* ****	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL  e. IRON	*
* ****	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL  e. IRON  EFFECTS LUNGS	*
* ****	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL  e. IRON	*
* ****	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL  e. IRON  EFFECTS LUNGS	*
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* ****	R O D U C T N A M E M S D S #  Low Alloy Steel Grades NF50002  N F P A LABEL FLAM 0 HLTH 3 REACT 0  (Ingredients & Hazards)  a. CHROMIUM  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MANGANESE  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG  d. COPPER (AS DUST/MIST/FUME)  EFF; LUNGS & GASTROINTESTINAL  e. IRON  EFFECTS LUNGS  N A T I O N A L F O R G E  Erie, Pa. Irvine. Pa.	*

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STAINLESS STEEL, STAINLE

#### SAFETY DATA SHEET MATERIAL

NATIONAL FORGE COMPANY

PAGE (1)

Erie, Pa.

Irvine, Pa.

Erie Emergency Phone 814-452-2300

DS 1D # NESD004 16512

Irvine Emergency Phone 814-563-7522

Original issue date: 04/16/87

Revised:

1. IDENTIFICATION

Product Name: Stainless Steel

(b)

Other (c)

(d)

NEPA

LABEL FLAMMABILITY: 1

HEALTH: 3 REACTIVITY: 0 H M I S PERSONAL PROTECTION: J

DOT Instructions: N/A

#### 2. INGREDIENTS AND HAZARDS

Ingredients	x	CAS NO.	PEL	TLV	INGREDIENT HAZARD DATA
a. CHROMIUM	>21.	7440-47-3	.1 MG/M3	.05 MG/M3 313	CANCER, GASTROINTEST. LIVER: LEUKEMIA
b. NICKEL	>15.	7440-02-0	1 MG/M3	1 MG/M3 186	CANCER, LUNG & NASAL
c. COBALT (AS DUST)	>.3.	7440-48-4	.1 MG/M3	.05 MG/M3 271	Acute Toxicity, High Risk; Cumulative Lung Damag
d. MOLYEDENUM (AS DUST)	>4 .	7439-98-7	15 MG/M3	10 MG/M3 339	RESP. IRR: LIVER/KIDNEY DAMAGE BONE DEFORMITY
e. MANGANESE	2.	7439-96-5	5 MG/M3	1 MG/M3 312	EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG
f. TITANIUM (AS DUST)	>.6.	7440-32-6	15 MG/M3	10 MG/M3 234	IRRITANT: EYE & RESPIRATORY SYSTEM
g. TANTALUM (AS DUST)	1.	7440-25-7	5 MG/M3	5 MG/M3 157	TOXIC AND IRRITATING FUME
h. IRON		7439-89-6	10 MG/M3	5 MG/M3 151	EFFECTS LUNGS
. SILICON	1.	7440-21-3	15 MG/M3	10 MG/M3 243	NUISANCE PARTICULATES, VAPORS, OR GASES

#### 3. PHYSICAL DATA

k .

Boiling (F) N/A (C) N/A Vap. Pres. (mm Hg) N/A Spec. Grav. (H2O=1) 7.6-7.8 Evap. Rate( =1) N/A (C) N/A Vap. Dens.( Freezing (F) N/A =1) N/A Volitale by Vol. NA/ % Soluble ? INSOLUBLE Appearance and Odor: METALLIC, ODORLESS

#### 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (method used) N/A Flammable Limits (LEL) N/A % (UEL) N/A % Auto-ign. Temp. N/A DRY SAND, DOLOMITE, GRAPHITE POWDER Extinguishing Med.

Special Procedure 2062 Use that which is appropriate for the surrounding fire conditions. Use full protective clothing and self-contained breathing equipment.

3030 HIGH CONCENTRATIONS OF DUST MAY EXPLODE Unusual Hazard

Information contained in this MSDS is believed to be correct as it was obtained from sources we believe are reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy. User assumes all risk and liability of any use, processing or handling of any material. Hazards connected with the use are solely the users responsibility.

PAGE 1

PAGE (2)

MSDS ID # \*\*\*\*NF50004

Product: Stainless Steel

#### HEALTH HAZARD DATA

Overexposure IRRITATION EYES, UPPER RESPIRATORY MAY CAUSE PNEUMONITIS, GIDDINESS, NAUSEA, METAL FUME FEVER, HEADACHE,

Symptoms DIZZINESS, DYSPNEA, COUGH, SKIN SENSITIZER, DEFATTING AGENT, DERMATITIS.

ani

Effects DELAYED SYMPTOMS 12 TO 36 HOURS - DYSPNEA RETURNS, BLUE COLOR OF SKIN, FEVER, DELIRIOUS, DEATH MAY OCCUR.

CHROMIUM IS LISTED AS A CARCINOGEN BY NTP AND IARC. NICKEL IS LISTED AS A SUSPECTED CARCINOGEN BY NTP AND IARC.

Routes of entry 6108 Inhalation, Ingestion, Skin and/or Eye Contact.

EMERGENCY & 7020 INHALATION: Contact physician. Restore or support breathing, keep warm and at rest.

FIRST AID 7038 INGESTION: Give water to dilute, Induce vomiting. Get medical help.

PROCEDURES 7001 EYE CONTACT; immediately flush with water for 15 minutes including under the eyelids. Get medical help.
7004 SKIN CONTACT: Wash area with soap and water. Immediately remove soiled clothing.

AGGRAVATED KIDNEY DISEASE, CHRONIC RESPIRATORY DISEASE, LIVER DISEASE, EMPHYSEMA.

MEDICAL

CONDITIONS

#### 6. REACTIVITY DATA

Incompatability STRONG ACIDS, SULFUR. STRONG OXIDIZERS CONTACTING DUST IS EXPLOSIVE.

(Material to avoid)

Hazardous Decompo- MOLYBDENUM OXIDE, SULFUR DIOXIDE, HYDROGEN GAS, TOXIC, EXPLOSIVE AND FLAMMABLE GASES. sition Products

May Hazardous Polymerization Occur? NO

\* AVOID \* NONE LISTED

7. SPILL OR LEAK PROCEDURES CHEMTREC TELEPHONE # 800-424-9300 COAST GUARD TELEPHONE # 800-424-8802

Steps in case NORMAL CLEAN UP PROCEDURES. USE GOOD HOUSEKEEPING PRACTICE. WEAR APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AS REQUIRED. VENTILATE AREA.

Materials NONE LISTED

released

Waste disposal 9045 Consider possible reclaim value, dispose of contamiated material in accordance with

method applicable local, state, and federal laws.

#### 3. SPECIAL PROTECTION INFORMATION

Respiratory: IF TLV/PEL EXCEEDED: USE NIOSH/MSHA APPROVED RESPIRATOR

Gloves: RECOMMENDED Eye and Face: SAFETY SHIELD/SAFETY GLASSES

Other: CONTAMINATED CLOTHING SHOULD BE REMOVED AND CLEANED OR DISCARDED.

Ventilation: LOCAL TO MAINTAIN AIR QUALITY

#### 3. SPECIAL PRECAUTIONS

Handling and Use good housekeeping techniques to keep dust deposits in the workplace at a minimum. storage

Other USE GOOD HYGENIC PRACTICES. DO NOT EAT, DRINK, OR SMOKE IN AREA WHERE DUST OR FUMES ARE GENERATED. Precautions

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PRODUCT NAME
                                 MSDS#
                                  NF50004
 Stainless Steel
 N F P A LABEL FLAM 1 HLTH 3 REACT 0
           (Ingredients & Hazards)
       a. CHROMIUM
  CANCER, GASTROINTEST. LIVER; LEUKEMIA
              _____
       b. NICKEL
 CANCER, LUNG & NASAL
       c. COBALT (AS DUST)
  Acute Toxicity, High Risk: Cumulative Lung Damage
       d. MOLYBDENUM (AS DUST)
  RES?. IRR: LIVER/KIDNEY DAMAGE BONE DEFORMITY
              -----
       e. MANGANESE
  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG
              ------
           NATIONAL FORGE
          Erie, Pa. Irvine, Pa.
            16512
                          16329
         814-452-2300 814-563-7522
 **********
**********
   RODUCT NAME
                                  MSDS#
 Stainless Steel
                                  NF50004
 N F P A LABEL FLAM 1 HLTH 3 REACT O
            (Ingredients & Hazards)
       a. CHROMIUM
  CANCER, GASTROINTEST. LIVER: LEUKEMIA
       b. NICKEL
  CANCER, LUNG & NASAL
              -----
       c. COBALT (AS DUST)
  Acute Toxicity, High Risk: Cumulative Lung Damage
       d. MOLYBDENUM (AS DUST)
  RESP. IRR; LIVER/KIDNEY DAMAGE BONE DEFORMITY
              ~____
       e. MANGANESE
  EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG
              -----
           NATIONAL FORGE
           Erie, Pa. Irvine. Pa.
            16512
                         16329
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814-452-2300

814-563-7522

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TEEL.

#### SAFETY DATA SHEET MATERIAL

COMPANY NATIONAL FORGE

> Irvine, Pa. Erie, Pa.

Erie Emergency Phone 814-452-2300

PAGE (1)

ISDS ID # NF50006 16329

Irvine Emergency Phone 814-563-7522

Original issue date: 04/16/87

Prepared by:

16512

1. IDENTIFICATION

Product Name: Tool Steel Other (c)

Revised:

HEALTH: 2

(b) (d) ENDIFORMENTAL: 84587 (: <u>-----</u> Avaleatime:

NEPA

LABEL FLAMMABILITY: 1

REACTIVITY: 0

H M I S PERSONAL PROTECTION:

DOT Instructions: N/A

#### 2. INGREDIENTS AND HAZARDS

Ingredients	x	CAS NO.	PEL	TLV	INGREDIENT HAZARD DATA
a. CHROMIUM (FUME)		7440-47-3	.1 MG/M3	.1 MG/M3 313	CANCER, GASTROINTEST. LIVER: LEUKEMIA
b. NICKEL		7440-02-0	1 MG/M3	1 MG/M3 186	CANCER, LUNG & NASAL
e. MOLYBDENUM (AS DUST)		7439-98- <b>7</b>	15 MG/M3	10 MG/M3 339	RESP. IRR; LIVER/KIDNEY DAMAGE BONE DEFORMITY
d. MANGANESE		7439-96-5	5 MG/M3	1 MG/M3 312	EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG
e. COPPER (DUST & FUME)		7440-50-8	.1 MG/M3	.2 MG/M3 349	EFF: LUNGS & GASTROINTESTINAL
f. VANADIUM		7440-62-2	.5 MG/M3	.05 MG/M3 322	EFFECTS: EYE, NOSE, RESPIRATORY
g. ALUMINUM		7429-90-5	N/A	10 MG/M3 117	EXTREMELY, FLAMMABLE
h. TUNGSTEN		7440-33-7	15 MG/M3	_10 MG/M3 240	EFFECTS: LUNG & SKIN
1. IRON		7439-89-6	10 MG/M3	5 MG/M3 151	EFFECTS LUNGS
. CARBON (DUST)		_7440-44-0	15 MG/M3	10 MG/M3 243	NUISANCE PARTICULATES, VAPORS, OR GASES
k. SILICON (DUST)		7440-21-3	15 MG/M3	10 MG/M3 243	NUISANCE PARTICULATES, VAPORS, OR GASES
1.					

#### 3. PHYSICAL DATA

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Boiling (F) N/A (C) N/A Vap. Pres. (mm Hg) N/A Spec. Grav. (H20=1) 7.6-7.7 Evap. Rate( =1) N/A Freezing (F) N/A (C) N/A Vap. Dens.( =1) N/A Volitale by Vol. N/A X Soluble ? INSOLUBLE Appearance and Odor: METALLIC, ODORLESS

#### 4. FIRE AND EXPLOSION BAZARD DATA

Elash Point (method used), W/h Flammable Limits (LEL) N/A X (UEL) N/A X Auto-ign. Temp. N/A Extinguishing Med. DRY SAND, DOLOMITE, GRAPHITE POWDER

Special Procedure 2062 Use that which is appropriate for the surrounding fire conditions. Use full protective clothing and self-contained breathing equipment.

Unusual Hazard 3030 HIGH CONCENTRATIONS OF DUST MAY EXPLODE

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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PAGE (2) Product: Tool Steel

HEALTH HAZARD DATA

MSDS ID # \*\*\*\*NF50006

METAL FUME FEVER, HEADACHE, DIZZINESS, NAUSEA, GODDINESS, DYSPNEA, COUGH, SKIN SENSITIZER, DEFATTING AGENT, DERMATITIS, IRRITATION UPPER, RESPIRATOR, EYES. MAY CAUSE PNEUMONITIS BRONCHITIS, WHEEZING CHEST PAIN,

CONJUNCTIVITIS, NASOPHRYNGITIS. and

Effects

Overexposure

Symptoms

DELAYED SYMPTOMS 12 TO 36 HOURS - DYSPNEA RETURNS, BLUE COLOR OF SKIN, FEVER, DELIRIUS, DEATH MAY OCCUR.

CHROMIUM IS LISTED AS A CARCINOGEN BY NTP AND IARC. NICKEL IS LISTED AS A SUSPECTED CARCINOGEN BY NTP AND IARC.

Routes of entry 6108 Inhalation, Ingestion, Skin and/or Eye Contact.

EMERGENCY & 7020 INHALATION: Contact physician. Restore or support breathing, keep warm and at rest.

FIRST AID 7038 INGESTION: Give water to dilute, Induce vomiting. Get medical help.

PROCEDURES 7001 EYE CONTACT: immediately flush with water for 15 minutes including under the eyelids. Get medical help.

7004 SKIN CONTACT: Wash area with soap and water. Immediately remove soiled clothing.

7003 SKIN CONTACT: Wash area with soap and water. Get medical attention if irritation continues.

KIDNEY DISEASE, CHRONIC RESPIRATORY DISEASE, LIVER DISEASE, EMPHYSEMA, BRONCHITIS, WHEEZING CHEST PAIN, AGGRAVATED

MEDICAL ALLERGIC SKIN REACTION.

CONDITIONS

SHOULD DO PERIODIC MEDICAL EXAM.

6. REACTIVITY DATA

Stable ? YES \* AVOID \* EXTREME HEAT

STRONG ACIDS, SULFUR. STRONG OXIDIZERS CONTACTING DUST IS EXPLOSIVE. Incompatability

(Material to avoid)

Hazardous Decompo- MOLYBDENUM OXIDE, SULFUR DIOXIDE, HYDROGEN GAS, TOXIC, EXPLOSIVE AND FLAMMABLE GASES.

sition Products

May Eazardous Polymerization Occur? NO \* AVOID \* NONE LISTED

7. SPILL OR LEAK PROCEDURES CHEMTREC TELEPHONE # 800-424-9300 COAST GUARD TELEPHONE # 800-424-8802

NORMAL CLEAN UP PROCEDURES. USE GOOD HOUSEKEEPING PRACTICE. WEAR APPROPRIATE RESPIRATORY PROTECTION AND Steps in case PROTECTIVE CLOTHING AS REQUIRED. VENTILATE AREA.

Materials NONE LISTED

released

Waste disposal 9045 Consider possible reclaim value, dispose of contamiated material in accordance with

method applicable local, state, and federal laws.

8. SPECIAL PROTECTION INFORMATION

Respiratory: IF TLV/PEL EXCEEDED: USE NIOSH/MSHA APPROVED RESPIRATOR

Gloves: Eye and Face: SAFETY SHIELD/SAFETY GLASSES

CONTAMINATED CLOTHING SHOULD BE REMOVED AND CLEANED OR DISCARDED.

Ventilation: LOCAL TO MAINTAIN AIR QUALITY

9. SPECIAL PRECAUTIONS

Handling and Use good housekeeping techniques to keep dust deposits in the workplace at a minimum.

storage

Other USE GOOD HYGENIC PRACTICES. DO NOT EAT, DRINK, OR SMOKE IN AREA WHERE DUST OR FUMES ARE GENERATED.

precautions

* *	*********	***
* .	•	*
	PRODUCT NAME MSDS#	
		Ī
*	Tool Steel NF50006	*
		*
•	N F P A LABEL FLAM 1 HLTH 2 REACT 0	*
*	(Ingredients & Hazards)	*
*	a. CHROMIUM (FUME)	*
*	CANCER, GASTROINTEST. LIVER: LEUKEMIA	*
	***	*
_		_
	b. NICKEL	
*	CANCER, LUNG & NASAL	*
*		*
*	c. MOLYBDENUM (AS DUST)	*
*	RESP. IRR: LIVER/KIDNEY DAMAGE BONE DEFORMITY	*
*		*
*	d. MANGANESE	*
*	EFF: KIDNEY, LIVER, RESPIRATORY, BLOOD, NS, CNS, LUNG	*
*		
	e. COPPER (DUST & FUME)	
-	•	
	EFF: LUNGS & GASTROINTESTINAL	*
*		*
*	NATIONAL FORGE	*
*	Erie, Pa. Irvine, Pa.	*
*	16512 16329	*
*	814-452-2300 814-563-7522	*
**	***************************************	***
**	************	*
**	RODUCT NAME MSDS#	*
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**	RODUCT NAME MSDS# Tool Steel NF50006	*
**	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0 (Ingredients & Hazards)	*
**	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0  (Ingredients & Hazards) a. CHROMIUM (FUME)	*
** * * * * * *	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0 (Ingredients & Hazards)	*
* * * * * * * *	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0  (Ingredients & Hazards) a. CHROMIUM (FUME)  CANCER,GASTROINTEST. LIVER; LEUKEMIA	* * * * * * * *
***	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0  (Ingredients & Hazards)  a. CHROMIUM (FUME)  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL	*
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** * * * * * * * * * * * *	RODUCT NAME MSDS# Tool Steel NF50006  NFPA LABEL FLAM 1 HLTH 2 REACT 0  (Ingredients & Hazards)  a. CHROMIUM (FUME)  CANCER, GASTROINTEST. LIVER; LEUKEMIA  b. NICKEL  CANCER, LUNG & NASAL  c. MOLYBDENUM (AS DUST)  RESP. IRR; LIVER/KIDNEY DAMAGE BONE DEFORMITY  d. MANGANESE	* * * * * * * * * * * * *
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ISSUE DATE: 5/22/86

MANUFACTURER'S NAME: Various

COMMON NAME: Alloy Steel Bars, Plates & Pipes

PRODUCT/TRADE NAME: Accurloy, Nichroloy, Tungwin, Hi-Case, Baldwin #1/#711/AH, Mangabraze, Tuffbraze, Hi-Hang. Tel: (216)248-9500



acids to produce Hydrogen Gas.

7255 Division St. Bedford, OH 44146 Ecorse, MI 48229 Tel:(3i3)928-717i

U1 241 25

## II INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

	COMPONENTS (	(*)	CAS		EXPOSURE LIMITS	
	(1)		NUMBER	WEIGHT (2)	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
A11 (3)	Boron Carbon Chromium Copper Manganese Molybdenum Nickel Phosphorous Silicon Sulphur Tungsten	(A1) (B) (C) (Cu) (Mu) (Mo) (Mi) (P) (Si) (S) (W)	7440-42-8 7440-44-0 7440-47-3 7440-50-8 7439-96-5 7439-98-7 7440-02-0 7723-14-0	>96X  < 1X < .005X < 1X < 1	None established 15.Boron oxide None established 1.0 as Cr. metal 0.1 as fume; 1.0 as dust 5. as dust & fume 5. as soluble compds. 15. as insoluble compds. 1. as soluble compd. 0.1 as phosphorous Mone established 13. as sulphur dioxide None established 0.5 as dust; 0.1 as fume	<ol> <li>as fume;5. as dust</li> <li>as soluble compds.</li> </ol>
			7440-62-2	< 12	U.5 as dust; U. las tume	U.5 as dust & rume
						ا المنظم
	en jaro karan dari da 1990 da 1	* ***		er e	CERRO COPPER PE MSDS NUMBER — APPRO	CCFC-98-0233
					<pre>= ENVIRONMENTAL:(PR</pre>	108)
*******	diameter of annual section		<u></u>		SAFETY:	106)
	रा <i>ञ्चाला ५५</i> १ <b>,३</b> ५३			·····································	PURCHASING:(PR	,
	11 750	32.	A SERBORAN	the man could be	Commence in the same wine is a country of the tenth of th	the second of the second of the second

- (1) ALL STEEL PRODUCTS CONTAIN SMALL QUANTITIES OF VARIOUS ELEMENTS (FREQUENTLY REFERRED TO AS 'TRACE' OR 'RESIDUAL' ELEMENTS, LESS THAN .2%) WHICH GENERALLY ORIGINATE IN THE RAW MATERIAL USBD.
- (2) % OF ALLOYING MATERIAL VARIES WITH THE TYPE OF PRODUCT.
- (3) CHROMIUM & MICKEL AND THEIR COMPOUNDS ARE LISTED IN THE 3RD ANNUAL REPORT ON CARCINOGENS. AS PREPARED BY THE MATIONAL TOXICOLOGY PROGRAM.
- (\*) IN ADDITION, AN OIL COATING IS OFTEN ADDED TO OUR PRODUCTS AS A RUST INHIBITOR.

	THE PRIVETON DAY.	
-	MATERIAL IS (AT HORMAL COMDITIONS)	APPEARANCE AND ODDA
	SOLID	CRAY/RYACKNO ODOR
		SPECIFIC GRAVITY
.	2650 - 2750 7 - 2750 7 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750 2 - 2750	Approximately 7
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Steel products in the solid state present no fire or explosion hazard

	MA REA	endr	(QA	A								
4	STABILITY					 				Reacts		

Chemically Stable CONDITIONS TO AVOID

Non-ventilated areas during welding, burning, grinding, machining. Metallic fumes or dust may be produced.

HAZARDOUS DECOMPOSITION PRODUCTS

May liberate metal fumes, metal oxides, or other oxides if exposed to temperatures above the melting point.

## VICEEDANTH HAZARDADAVA

NOTE: STEEL PRODUCTS IN THE NATURAL STATE DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HAZARD. HOWEVER, OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUSTS WHICH MAY PRESENT HEALTH HAZARDS IF TLY'S ARE EXCEEDED.

## EFFECTS OF OVEREXPOSURE: MAJOR EXPOSURE HAZARD: INHALATION

ACUTE: The inhalation of high concentrations of freshly formed oxide fumes and dusts of metals in the respirable particle size range can cause an influenza-like illness termed 'Metal Fume Fever'. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

CHRONIC inhalation of high concentrations of iron oxide fumes and dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Exposure to high concentrations of nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis and edema. Certain forms of nickel dust may cause nasal or lung cancer in humans.

Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of lung cancer.

## EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove overexposed person to fresh air, if condition continues seek medical attention immediately.

EYE CONTACT: Flush eye with water to remove the particle AND get medical attention to ensure the particle has benn completely removed.

#### VIL SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

### VIII, SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/ASHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: 05 (258) THE PARTIES OF THE PARTIES AND THE PARTIES AND

EYE:

Use safety glasses or goggles as required for welding a burning; sawing, brazing, grinding or machining operations.

VENTILATION: 1 Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

#### OTHER PROTECTIVE EQUIPMENT:

Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

### IX. SPECIAL PRECAUTIONS

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#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

The information in this MSDS was obtained from sources which we believe are reliable. However Baldwin Steel its corporate officers, employees and representatives make no warranty, expressed or implied, as to the absolute correctness, accuracy or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

IRRITANT NONE NONE 7439-89-6

IRRITANT 1MG/M3 1 MG/M3 7440-02-0

#### STUD PULL ELECTRODE SECTION III - PHYSICAL DATA

PAGE : 02

BOILING PT. (FAHRENHEIT)	N/A	SPEC GRAVITY (H20=1) :N/A
APOR PRESSURE (MM HG).	N/A	COLOR N/A
APOR DENSITY (AIR=1)	N/A	ODOR N/A
PH ● 100%	N/A	CLARITY N/A
PERCENT. VOLATILE BY VOLUME (%)	N/A	EVAPORATION RATE N/A (BU AC = 1)
SOLUBILITY IN WATER	N/A	
VISCOSITY	N/A	***************************************

CALCIUM CABONATESOURCE-3\*)SECT IRRITANT 10 MG/M3 NONE 1317-65-3

#### SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED) N/A N/A	FLAMMABLE LIMITS	N/A N/A UEL
EXTINGUISHING MEDIA "ALC		WATER <spray <othe<="" th=""></spray>
SPECIAL FIRE FIGHTING PRO SEE AMERICAN NATIONAL STA HED BY THE AMERICAN WELDI 1910)	CEDURES NDARD 249.1. SAFETY IN WELDING A NG SDCIETY AND OSHA PUBLICATION	ND CUTTING, PUBLIS 2206(29 C.F.R. 192
UNUSUAL FIRE & EXPLOSION ON FLAMMABLE WELDING ARC	MAZARDS AND SPARK CAN IGNITE COMBUSTIBL	E\$.
NFPA HAZARD RATING (O=INS 2 <health <flam<="" o="" th=""><th>IGNIFICANT: 1=SLIGHT: 2=MODERATE: 3 MABILITY O <reactivity th="" w*<<=""><th>=HIGH: 4=EXTREME): SPECIAL</th></reactivity></th></health>	IGNIFICANT: 1=SLIGHT: 2=MODERATE: 3 MABILITY O <reactivity th="" w*<<=""><th>=HIGH: 4=EXTREME): SPECIAL</th></reactivity>	=HIGH: 4=EXTREME): SPECIAL
	SECTION V - HEALTH HAZARD DATA	

THRESHOLD LIMIT VALUE : NOT ESTABLISHED FOR MIXTURE SEE SECTION II

TRON

NICKEL

ION VI FOR MORE INFO. - TOXICITY

EFFECTS OF OVEREXPOSURE - ACUTE - (SHORT TERM EXPOSURE)
FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH. SHORT TERM OVEREXPOSURE SECTION V - HEALTH HAZARD DATA PAGE : 03

TO WELDING FUMES DRYNESS OR IRRITA	MAY RESULT	IN DISCOMFORT	SUCH AS: DIZZINESS, EYES C - (LONG TERM EXPOS SIS (IRON DEPOSITS IN AFFECT PULMONARY FUNC TRIC SHOCK CAN KILL.	NAUSEA, OR
LONG TERM OVEREX	POSURE MAY L	- CHRONI EAD TO SIDERO STIGATORS TO	.C - (LONG TERM EXPOS ISIS (IRON DEPOSITS IN AFFECT PULMONARY FUNC	URE) THE LUNG) Tidn. Arc
PRIMARY ROUTE OF EMERGENCY & FIRST			< INGESTION < A	BSORPTION
INHALATION	V :	D C411 EDR ME	DICAL AID ADMINISTER N ARTIFICIAL RESPIRAT	CXYGEN IF BRE
ATHING IS DIFFICE ECTABLE PULSE, BECOMMENDED BY THE AM	GIN EXTERNAL MERICAN RED	HEART MASSAG CROSS, IN CASE	E EMPLOY FIRST AID TE E OF ELECTRICAL SHOCK. ID ADMINISTER FIRST AI	CHNIQUES RECO
ER PRIOR TO REMOV		OSURE AREA AN	D ADMINISTER FIRST AL	D.
FLUSH WITH WATER	FOR AT LEAS	T 15 MINUTES.		*********
REMOVE CONTAMINA	ACT: TED CLOTHING	. WASH SKIN	WITH SOAP AND WATER.	******
DO NOT INDUCE VO	MÍTING. OBT	AIN MEDICAL A	TTENTION.	
NOTES TO P	PHYSICIAN :			
				*********
	5	ECTION VI - T	CXICITY INFORMATION	
PRODUCT CONTAINS	CHEMICAL II	STED AS CARCI	NOGEN OR POTENTIAL CA	RCINGEN BY
IARC <yes n<="" td=""><td>TP <yes< td=""><td>DSHA <ye< td=""><td>S ACGIH <yes ot<="" td=""><td>HER <yes< td=""></yes<></td></yes></td></ye<></td></yes<></td></yes>	TP <yes< td=""><td>DSHA <ye< td=""><td>S ACGIH <yes ot<="" td=""><td>HER <yes< td=""></yes<></td></yes></td></ye<></td></yes<>	DSHA <ye< td=""><td>S ACGIH <yes ot<="" td=""><td>HER <yes< td=""></yes<></td></yes></td></ye<>	S ACGIH <yes ot<="" td=""><td>HER <yes< td=""></yes<></td></yes>	HER <yes< td=""></yes<>
X <nd< td=""><td></td><td></td><td>X<no EXPOSURE</no </td><td>X<nd< td=""></nd<></td></nd<>			X <no EXPOSURE</no 	X <nd< td=""></nd<>
TITANIUM DICXIDE		CAS# 13463-67-7	EXPOSURE LIMIT MG/M3 15/10	SDURCE (1)*/(2 (1)*/(2 (1)*/(2
SILICON DIOXIDE SODIUM ALUMINUM F (1) * DCCUPATIONAL		60676-86-0 15096-52-3 HEALTH ADMIN	15/10 0.1/0.1 2.5/2.5 JISTRATION, 29 C.F.R.	1910.1000 PER
MISSIBLE EXP (2) AMERICAN CU HOLD LIMIT	POSURE LIMIT NPERENCE OF (TIV(P))	(PEL). GOVERNMENTAL	ISTRATION, 29 C.F.R. INDUSTRIAL HYGENISTS	(ACGIH) THRES
(3) + NOT KNOWN:	NÚISANCÉ PAR	TICULATE CON	CENTRATION PER ACGIH	IS 10MG/M3.
	\$	ECTION VII -	REACTIVITY DATA	
			1 00001071000	
STABILITY -	218RF#	<onstabl< td=""><td>CONDIDTIONS TO AVOID</td><td></td></onstabl<>	CONDIDTIONS TO AVOID	
************	REFER TO RE	FERENCES FOR	FURTHER INFORMATION	(SECTION XII)
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#### SECTION > - STORAGE AND HANDLING INFORMATIPAGE : 05

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DURATRODE, A PARTSMASTER CD., DIV OF NCH ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE STORAGE OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

# CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0236 APPROVALE:

MSDS448

#### MATERIAL SAFETY DATA SHEET

SECTION 1.

Product Identification

Manufacturer: General Refractories Co.

Address: 600 Grant St., Room 3000, Pittsburgh, PA 15219

Main Telephone Number: 412-562-6000

Emergency Telephone Number: 301-355-3400

Product Name, Sales Name or Trade Name: STEELKLAD B BIE

Product Type: Magnesite-Chromite Refractories

SECTION 2.

# Hazardous Ingredients

Chemical	Common	CAS	Per	OSHA		Carcinogen
Name	Name	Number	Cent**	PEL	TLV	(Y/N)*
Ferro-	_					
chromite	(FeCr2O4)	12737-27-8	<20.0	(1)	(1)	No

Note: (1) Contains Cr(III) which is not listed as hazardous by NIOSH/OSHA. ACGIH TLV for Cr(III) is 0.5 mg/m3. The main ingredient in this product is sinter MgO which is not hazardous.

\*Per NTP, IARC or OSHA lists. \*\*On Phase Basis. \*\*\*Total Basis.

#### SECTION 3.

# Physical Data

Appearance: Brown-Black Brick Shape

Specific Gravity: 3.10-3.25

Boiling Point: NI

Evaporation Rate: NI

Solubility in Alcohol: Insoluble

Percent Volatile by Vol.: NI

Odor: Odorless

Melting Point: Over 2200°C

Vapor Pressure: NI

Solubility in H2O: Insoluble Other Solvents: Strong acids

Vapor Density: NI

#### SECTION 4. Fire and Explosion Hazard Data

Flash Point (Method used): Nonflammable

Flammable Limits: LEL NA Extinguishing Media: Nonflammable

Special Fire Fighting Procedures: None Unusual Fire and Explosion Hazards: None UEL NA

#### Page 2

SECTION 5.

Health Hazard Data

Primary Routes Exposure Symptoms Emergency Procedures

of Entry

Inhalation

Cough, dyspnea, Black Sputum Move to fresh air.

Pulm. Func., Fibrosis

Ingestion

NE

Skin Contact

Irritation

Wash with water.

and Absorption

Irritation Eyes

Flush with water.

Other Potential NE

Health Risks

NE

SECTION 6.

Potential Exposure

When

Hazard Form

Installation

Dust from cutting brick.

Removal

Dust from tear-out after service.

SECTION 7.

Corrosivity and Reactivity Data

Stabliity: Stable

Polymerization: Will not occur

Incompatability (materials to avoid): None

Decomposition Products: CO, CO2, CH4, H2 and H2O

from binder.

Conditions to be Avoided: Open flame and intense heat (if not

in service).

SECTION 8.

Disposal Procedures -----

Spill or Leak Procedures: Clean up like any solid material.

Waste Disposal Method: Approved landfill in accordance with all federal, state and local regulations.

Page 3

SECTION 9. Personal Protective Equipment/Procedures

Respiratory Protection: Yes Type: NIOSH approved dust

respirator.

Ventilation--Local: NA

Mechanical(General): During handling, cutting, etc.

Other: NA

Protective Gloves: Non-porous gloves.

Eye Protection: Safety glasses or goggles.

Other Equipment: Steel toe shoes.

Action to be Taken During Repair and Maintenance of Equipment that has

been in Contact with this Product: Regular clean up.

SECTION 10. Special Precautions

During Storage: None

Other: None

SECTION 11. Preparation/Revision

-------

Date: 11/24/85

NA=Not Applicable

NI=No Information or Test Data

NE=Not Established

-0236



#### GENERAL REFRACTORIES COMPANY



Customer:

Date:

2-11-91

Cerro Corp.
Cerro Copper Products
PO Box 66800
St. Louis, MO 63166
(For Sauget, Illinois)
Dear Customer,

This product contains a toxic chemical or chemicals as listed on MSDS form attached. It is subject to the reporting requirements of section 313-Title-111 of the superfund amendments and reauthorization act of 1986 and 40 CFR Part 372.

Product: SK-B-EE Tab BIE



# CERRO COPFER FRODUCTS COMPANY MSDS NUMBER - CCPC-00-0237

SULFURIC ACID

PRODUCT IDENTITY

EMERGENCY CONTACT

CHEMICAL NAME: Sulfuric Acid

TRADE NAME: None FORMULA: H<sub>2</sub>SO<sub>4</sub>

CAS NO.: 7664-93-9
PHYSICAL FORM: Liquid

CORPORATE MANAGER OF INDUSTRIAL HYGIENE AMAX INC.

AMAX INC.

GREENWICH, CONNECTICUT 06836 TELEPHONE NO.: (203) 629-7112

#### COMPOSITION

MATERIAL	CAS NO.	8	PERMISSIBLE AIR LEVEL
Hydrogen Sulfate	7664-93-9	93	OSHA: 1 mg/m <sup>3</sup> ACGIH: 1 mg/m <sup>3</sup>
Water		7	

#### HEALTH HAZARD INFORMATION

OSHA PERMISSIBLE EXPOSURE LEVEL:

ACGIH THRESHOLD LIMIT VALUE:

1 mg/m<sup>3</sup> 1 mg/m<sup>3</sup>

PRIMARY ROUTE OF ENTRY: Eye and skin contact, inhalation and ingestion.

#### SYMPTOMS AND EFFECTS OF:

ACUTE OVEREXPOSURE:

Inhalation of fumes or mist can result in irritation or burns to the upper respiratory tract and lungs. Pulmonary edima can also occur. Ingestion of this material will the burn mouth, throat and stomach and can cause death. Eye or skin contact will result in serious burns and may cause blindness.

CHRONIC OVEREXPOSURE:

Erosion of the teeth, mouth inflammation, tracheo-

bronchitis, conjunctivitis and skin lesions.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY THIS MATERIAL: Chronic respiratory

disease.

IS THIS MATERIAL CONSIDERED TO BE CARCINGGENIC BY:

NTP? No

IARC? No

OSHA? No

#### EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: Immediately flush eyes with a large amount of water for at lease 15 minutes (including under eyelids). Diluting and washing acid from the eyes must be done immediately to prevent permanent eye damage or blindness. Call a physician immediately.

Skin Contact: Immediately flush skin with a large amount of water. Remove clothing while under the safety shower. Call a physician immediately.

halation: Remove to fresh air. If breathing has stopped, perform artificial respiration. Call a physician immediately.

<u>Ingestion</u>: Do not induce vomiting. If conscious, give several glasses of milk or water. Call a physician immediately. NOTE: Pulmonary edema may occur - monitor patient.

Ce E. Erres 2-3-86

#### EXPOSURE CONTROL MEASURES

ENGINEERING: Use ventilation to maintain exposure levels of sulfuric acid mist or vapors within the OSHA limit. Maintain eyewash fountains and safety showers where sulfuric acid is used or stored.

PERSONAL PROTECTIVE EQUIPMENT: When required use a NIOSH/MSHA approved respirator Elevated exposures may require the use of self-contained breathing equipment. Wear chemical safety goggles and full-face plastic shield. For increased protection use supplied air acid hood. DO NOT wear contacts. Wear acid-resistant apron, protective clothing, boots and gauntlet gloves for routine use. Acid-resistant trousers and jacket will provide increased protection.

#### REACTIVITY DATA

STABILITY: Sulfuric acid is stable.

INCOMPATABILITY: With water, alkaline solutions, metals and strong oxidizing, reducing or combustible materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Contact with cyanides, carbides and sulfides will produce hazardous gases. Sulfuric acid will release sulfur dioxide at extremely high temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

## FIRE and EXPLOSION HAZARD DATA

FLASH POINT: Not applicable. FLAMMABLE LIMITS: LEL \* UEL \*

EXTINGUISHING MEDIA: Dry chemical or carbon dioxide. Do not add water or othliquid to acid. Explosive hydrogen gas can be generated inside metal drums o storage tanks.

SPECIAL FIRE FIGHTING PROCEDURES: Wear full protective clothing. Wear self-contained breathing equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cool exterior of storage tanks and drums of H2SO4 with water if exposed to fire to avoid rupture. Do not get water or other liquids in acid.

\*Do not apply

#### PRECAUTIONS FOR SAFE HANDLING AND USE

PRECAUTIONS FOR HANDLING AND STORAGE: Vent metal containers weekly or move frequently in hot weather to prevent hydrogen gas build-up. Store in a cool, ventilated area away from combustibles and reactive chemicals.

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Neutralize with soda ash or lime. Adding soda ash will produce carbon dioxide - maintain adequate ventilation. Keep out of sewer.

WASTE DISPOSAL METHODS: Recover acid if possible. Dispose of in accordance with federal, state and local laws and regulations.

NOTE: THIS MATERIAL WAS REPORTED ON THE INITIAL TSCA INVENTORY.

# PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 279°C SPECIFIC GRAVITY (H2O=1): 1.84 VAPOR PRESSURE @ 20°C: essentially 0 SOLUBILITY IN WATER: Complete APPEARANCE AND ODOR: Colorless to light brown oily liquid. Odorless.

DATE PREPARED: November 20, 1985 DATE REVISED:

# MATERIAL SAFETY DATA SHEET

A-286 Superacloy

I. PRODUCT IDENTIFICATION

Manufacturer's Name:

Address:

Alpha Tool Works 15100 Radius Place

Santa Fe Springs, California 90670

Telephone Number:

(213) 921-9881

Date:

August 5, 1986

ARMOO OTOUGOTA NURROODOTO ORRAC 1826-00-0400 - RABMUN BORM

Product Name:

Extrusion Tool

# II. INGREDIENTS

No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steels. The following values are applicable to component elements:

Element	Weight Percentage	Number	OSHA´PEL (mg/m³)	ACGIH TLV (mg/m³)
Carbon	0-2.25	1333-86-4	3.50 (As carbon black)	3.50 (As carbon black)
Chromium	0-17.00	7440-47-3	1.00	0.50
Iron	80.00-99.00	1309-37-1	10.00 (As iron oxide fume)	5.00 (As iron oxide fume)
Manganese	0-1.25	7439-96-5	5.00 (Ceiling limit dust)	5.00 (Ceiling limit dust) I.00 (As fume)
Molybdenum	0-2.50	7439-98-7	5.00 (soluble compounds)	5.00 (soluble compounds)
Nickel	0-2.00	7440-02-0	1.00	0.10 (soluble compounds)
Silicon	0-2.00	7440-21-3	None 5.00 (Respirable	
Sulfur	0-0.20	7446-09-5	None	5.00 (As sulfur Dioxide)
Tungsten	0-3.00	7440-33-7	None	1.00 (Soluble compounds)
Vanadium	0-2.00	1314-62-1	0.50 (Ceiling limit dust)	0.50 (As dust)
			0.10 (Ceiling limit fumes	1.05 (As fume)

Some or various combinations of these components may appear in grades produced. Consult appropriate data sheets or test reports for the specific ordered analysis or contact Alpha Tool Works.

# III. PHYSICAL DATA

Melting Point: 2400-2850°F
Specific Gravity: 7.5 - 8.5
Boiling Point: N/A
Solubility in water: Insoluble
Vapor Pressure: N/A

Appearance and Odor Solid, odorless metal. Metallic gray or lustre except when material is painted.

#### IV. FIRE AND EXPLOSION DATA

Flash Point N/A

Flammability: Lower Explosive Limit: N/A
Upper Explosive Limit: N/A

Extinguishing Media: N/A

Special Firefighting Procedures: N/A

# V. HEALTH HAZARD DATA

Steel products in the form shipped do not present an inhalation, ingestion or contact hazard. However, operations such as torch cutting, welding and grinding may result in the following effects if exposures exceed the limits listed in Section II, INGREDIENTS.

# Effects of overexposure:

Acute: Irritation of eyes, nose or throat, metallic taste in mouth, or

metal fume fever. Possible dermatitis.

Chronic: Prolonged over-exposure to alloy dusts or fumes may cause skin,

eye, throat or nose irritations, leading to pulmonary diseases. Excessive and repeated inhalation of chromium and nickel fumes or dust may cause severe irritation, ulceration and increased risk of cancer in the respiratory system. Excessive and prolonged inhalation of manganese can cause central nervous system damage

resembling a Parkinson-like syndrome.

First Aid: Inhalation - remove to fresh air and get medical attention.

Skin - wash areas well with soap and water.

Eyes - flush well with running water to remove particles and

get medical attention.

Ingestion - in the unlikely event that large quantities of metal have been ingested, get medical attention.

## VI. REACTIVITY DATA

Stability - Stable

Conditions to avoid - avoid generation of dust which can present a moderate fire and explosion hazard.

Incompatibility - molten metal will react violently with water.

## VII. PERSONAL PROTECTION INFORMATION

Use general and local exhaust ventilation to keep airborne concentrations of dusts and fumes below the PEL's and TLV's of Section II. Employees should wear NIOSH or MSHA approved respirators for protection against dust or fumes. Food should not be consumed in the work area.

Full protective clothing should be worn by workers exposed to heavy concentrations of dust. Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis.

Approved safety glasses with sideshields or goggles should be worn during operations creating eye hazards. A welding hood should be worn when welding or burning. Approved steel-toe shoes with metatarsal guards should be worn for foot protection.

## VIII. SPILL OR LEAK PROCEDURES

Action to take for spills - N/A Waste disposal methods - N/A

#### IX. SPECIAL PRECAUTIONS

Adequate ventilation and/or respiratory protection should be provided if exposure limits in Section II, INGREDIENTS are exceeded.

Use good housekeeping practices to prevent accumulation of dust and fume and keep airborne dust and fume away.

All information, recommendations and suggestions contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made by Alpha Tool Works with respect to the information provided.

Employers should use this information only as a supplement to other available data. Since the use of these steel products is beyond our control, it is each employer's responsibility to assure the safety and health of their employees. Alpha Tool Works will not assume liability arising out of use of this product by others.

# **BOHLER BROS. OF AMERICA, INC.**

Specialty Steels and Products
Avon Industrial Park, 40 Robbie Road, Avon, MA 02322
Telephone (617) 588-1150
Telex 94-0535



DERRO COPPER PRODUCTS COMPAN - MSD5 NUMBER - COPC-00-0207

# MATERIAL SAFETY DATA ENDIRONMENTALIZZE

I. PRODUCT INFORMATION

Company: Bohler Bros. of America, Inc.

Issue Date: November 22, 1985

Product Groups: Carbon, Alloy, Tool, High Speed and Stainless Steel

Product Form: Bar, Sheet, Plate, Strip, Section, Forging, Tubing and Structurals

#### II. HAZARDOUS INGREDIENTS

Component Elements, CAS Number, % Weight and Permissible Exposure Limits as determined by OSHA and ACGIH for each component:

Material/Component	CAS Number % Wt.		sure Limits
Base Metal		OSHA PEL (mg/m <sup>3</sup> )	
Iron (Fe)	7439-89-6 Balance	10(Fe <sub>2</sub> O <sub>3</sub> Fume)	5.0 (Fe <sub>2</sub> O <sub>3</sub> Fume)
Alloying Elements		_	
	7429-90-5 < 2.00	None Listed	5.0 as welding fume
Carbon (C)	7440-44-0 < 3.00	None Listed	None Listed
Chromium (Cr)	7440-47-3 < 35.00	1.0 as chrome	0.5 as chrome
Cobalt (Co)	7440-48-4 < 12.00	1.0 as cobalt & fume	0.05 as fume
Copper (Cu)	7440-50-8 < 4.50	0.2 as copper;	0.2 as filmer
			1.0 as dust
Manganese (Mn)	7439-96-5 < 20.00	5 as manganese	5 as dust; l as fume
Molybdenum (Mo)	7439-98-7 < 10.00	15 as insoluble compds	10 as insoluble compds
Nickel (Ni)	7440-02-0 <35.00	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0 < 0.20	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7449-21-3 < 3.00	None Listed	10 total dust
Sulphur (S)	7704-34-9 < 0.40	13 sulfur dioxide	5 sulfur dioxide
Titanium (Ti)	7440-32-6 < 2.50	15 titanium dioxide	5.0 titanium dioxide
Tungsten (W)	7440-33-7 <19.00	None Listed	5 insoluble compounds
	7440-62-2 < 6.50	0.5 dust; 0.1 fume	0.50 dust and fume
Zinc (Zn) Coating	1314-13-2 <10.00	5.0 as fume	5.0 as fume

Note: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

# MATERIAL SAFETY DATA SHEET, Continued

#### III, PHYSICAL DATA

Material is (at normal Conditions):

O Liquid Solid O Gas O Other

Appearance and Odor:

Gray-Black with Metallic Luster -

Odorless

Acidity/Alkalinity - pH = NA

Melting Point - Approx. 27500F

Bolling Point - NA

Specific Gravity  $(H_2O = 1) - 7$ 

Solubility in water (% by weight) - NA

Vapor Pressure (mm Hg at 20°C) - NA

# IV. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protections

NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.

Hands, Arms and Body:

Use appropriate protective clothing, such as welders aprons and gloves when welding or burning. Check local codes.

Eyes and Face: Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.

Other Clothing and Equipment: As required,

# V. EMERGENCY MEDICAL PROCEDURES

Inhalation: Remove to fresh air; if condition continues, consult physician.

Eye Contact: Immediately flush well with running water to remove particulate; get

medical attention.

Skin Contact: If irritation develops, remove clothing and wash well with soap and

water. If condition persists, seek medical attention.

Ingestion: If significant amounts of metal are ingested, seek medical attention.

#### VI. HEALTH/SAFETY INFORMATION

# HEALTH

Steel products in the natural state do not present an inhalation, ingestion or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard in inhalation.

# MATERIAL SAFETY DATA SHEET, Continued

Effects of overexposure are as follows:

Excessive inhalation of metallic fumes and dusts may result in irritation of Acute: eyes, nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese, copper, zinc and lead may result in metal fume fever. Typical symptons consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours,

Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Iron (iron-oxide) - Pulmonary effects

Bronchitis, pneumonitis, lack of coordination.

Chromium - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence the exposure to welding fume induces human cancer.

Nickel -Same as Chromium. Copper -Pulmonary effects.

No reported cases of exposure to vanadium. Vanadium -

Inhalation of cobalt dust may cause an asthma-like disease Cobalt -

with cough and dyspnea.

Molybdenum - Plain in joints, hands, knees and feet.

Some evidence of pulmonary involvement, such as cough. Tungsten -

Lead -Prolonged exposures can cause behavioral changes, kidney damage, periphery neuropathy characterized by decreased hand-

grip strength and adverse reproductive effects.

None reported. Zinc -

Occupational Exposure Limits: See Section II

# FIRE AND EXPLOSION

Flash Point - NA Auto Ignition Temp. - NA Flammable Limits in Air:

Lower NA %

Extinguishing Media - NA

Upper NA %

Fire and Explosion Hazards - None Extinguishing Media Not to be Used - NA

#### REACTIVITY

Stabilitys

Incompatibility (Materials to Avoid):

● Stable O Unstable

Reacts with strong acids to form hydrogen gas

Keep Area Well Ventilated

Conditions to Avoid -

Avoid non-ventilated areas when cutting, welding, burning or

brazing; avoid generation of airborne dusts and fumes.

Hazard Decomposition Products - Metallic oxides.

#### BOHLER BROS. OF AMERICA, INC.

# MATERIAL SAFETY DATA SHEET, Continued

#### VII. ENVIRONMENTAL

Spill or Leak Procedures: NA. Special Precautions: Use good housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum.

Waste Disposal Method: Dust, etc. - follow federal, state and local regulations regarding disposal.

#### VIII, ADDITIONAL INFORMATION

# Disclaimer:

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness. The conditions or methods of handlling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.



# MATERIAL SAFE DATA SHEET

SUREBOND MORTAR

COMBUSTION ENGINEERING, INC.

CORPORATE HEALTH & SAFETY

WINDSOR, CT

Phone: (203) 285-9693

MANUFACTURER: C-E Refractories

ADDRESS: P. O. Box 828

SHFETT:

Valley Forge, PA 19482

FURCHASING: PRICE)

(215) 337-1100 Phone:

SECTION I, MATERIAL IDENTIFICATION

Material Name

Types: CAS Registry #

Chemical Analysis

SUREBOND MORTAR Soupy, SRM, Winterized Not Applicable

SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, NaO, K<sub>2</sub>O

# SECTION II, INGREDIENTS AND HAZARDS

SUREBOND MORTAR is a silica-alumina based refractory mortar in a sodium silicate suspension. This product contains more than 1% crystalline silica (free silica) and up to 1% ethylene glycol. The current OSHA permissible exposure limit (PEL) for respirable crystalline silica dust is 10 mg/m divided by percent free silica plus two, averaged over an 8-hour workshift. OSHA has not established a PEL for ethylene glycol. This product dries after usage. When this product is removed after its useful life (tear out), dust generation is likely. The user should be warned of the current PEL and precautions should be taken to avoid inhalation of dust, (see Section IX, Special Precautions and Comments).

This product does not contain any substances listed in the National Toxicology Program "Annual Report on Carcinogens" (1983) nor the International Agency for Research on Cancer Monographs, nor by OSHA.

# SECTION III, PHYSICAL DATA

Odorless light gray suspension of fine grain aggregate, supplied in a variety of wet consistencies ranging from a thin paint to a thick mud.

#### SECTION IV, FIRE AND EXPLOSION DATA

This material is non-combustible. Use extinguishing media appropriate to the surrounding area.

# SECTION V, REACTIVITY DATA

Material is air setting. Keep in sealed containers until ready to use and reseal partially used containers.

39 Pausen and Prino 03 (RVINO) SECTION V - HEALTH HAZARD DATA

WHITE THE PROPERTY OF THE PROP
INGESTION INHALATION THRESHOLD LIMIT VALUE
CARCINOGENIC NO NOT ESTABLISHED
EFFECTS OF OVEREXPOSURE MILD SKIN IRRITATION WITH CONTINUED EXPOSURE.
IRRITATION OR INJURY TO RESPIRATORY TRACT. BURNING IN MOUTH,
ABDOMINAL PAIN. SEVERE EXPOSURE TO BN DUST MAY PRODUCE
PNEUMOCONIOSIS. MAY CAUSE EYE DAMAGE. MILDLY ACIDIC, pH=2 to 3.
EMERGENCY AND FIRST AID PROCEDURES: FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES.
REMOVE CONTAMINATED CLOTHING AND WASH CONTAMINATED AREAS OF THE
THE COOR AND MATER IT INCESTED GIVE FINIDS IN LARGE
BODY WALL STORES TO EDECH AND IDEAT SYMPTOMS
IF INGESTED OR INHALED, SEEK PROMPT MEDICAL ATTENTION.
SECTION VI - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED CONTAIN, ABSORB ONTO A NON-FLAMMABLE

SECTION VI - SPILL OR	LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	NTAIN, ABSORB ONTO A NON-FLAMMABLE
ABSORBANT MATERIAL AND DISPOSE OF	AS DIRECTED BELOW.
	AND FEDERAL REGULATIONS. THIS
MATERIAL IN LIQUID FORM IS MILDLY	ACTUTE, prinz to y.

SECTION VII - SPECIAL PROTECTION INFORMATION								
RESPIRATOR APPROVED RESPIRATOR.								
VENTILATION	LOCAL EXHAUST NORMAL ROOM VENT		SPECIAL					
	MECHANICAL (General) TE SPRAYED USE APPROVED SPR	AY BOOTH	OTHER					
PROTECTIVE GLOVES	RUBBER	EYE PROTECTION	GOGGLES					
OTHER PROTECTIVE EQUIPMENT PROTECTIVE CLOTHING								

# PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING STORE IN ORIGINAL CONTAINER. AVOID USE OF MATERIALS OR EQUIPMENT SENSITIVE OR REACTIVE WITH ACIDIC SOLUTIONS. OTHER PRECAUTIONS WHEN DRIED AND UNDER DUSTING CONDITIONS, NOTE EFFECT OF OVER EXPOSURE WITH BORON NITRIDE CONTAINING PRODUCTS CITED ABOVE.

# MATERIAL SAFETY DATA SHEET

The purpose of this data sheet is to obtain technical inform information is required to evaluate health, safety and envious recommendations for use of the material. The information is necessary to meet requirements of the Occupation other Federal. State or Local regulations

NUMBER	FRODUCTS COMPANY - CCFC-00-0242
 4:5 5:5	FROM ALB:   FROM FROM

		SEC	CTION I		
SUPPLIERS NAME Matter Incorporated			EMERGENT 1 - 677-4301		<u> </u>
ADDRESS INUMBER STREET CITY STATE and ZIP CODE				<del></del>	
	gh R	idge, M	o. 63049		
CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNONY 13 Swige Cleaner No. 129		
Detergent CHEMICAL FAMILY		FORMULA	DWIFE GIGGIET NO. 12.7		
Hard surface cleaner	i	FORMULA	Proprietary		
	ON II	- HAZA	ARDOUS INGREDIENTS		
PAINTS, PRESERVATIVES & SOLVENTS	e <sub>ye</sub>	TLV (UNITS)	ALLOYS and METALLIC COATINGS	96	TLV (UNITS)
Pigments			Base Metal		
Catalyst			Alloys		
Vehicle			Metallic Coatings		
Ethylene glycol mono Solvents butyl ether	3		Filler Metal Plus Coating or Core Flux		
Additives sodium meta silicate	2		Others		
Potasium hydroxide Others	6.5				
HAZARDOUS	MIXT	URES OF	OTHER SOLVENTS	%	TLV (UNITS)
None					
S	ECT	ON III —	PHYSICAL DATA		
Boiling Point (°F) 215 F			Specific Gravity (H <sub>2</sub> O = 1) 1.1	Action to the second	
Vapor Pressure (mm Hg.) N/D			Percent Volatile by Volume (%)	80	
Vapor Density (Air = 1) N/D			Evaporation Rate ( 1 = 1)		
Solubility in Water complete			Appearance and Odor pink liquid,	<del></del>	
SECTION IV	— FI	RE AND	EXPLOSION HAZARD DATA	LAL	UE.
Flash Point (Method Used) None			Flammable Limits N/A		
Extinguishing Media N/a					•
Special Fire Fighting Procedures					
Unusual Fire and Explosion Ends					

Threshold Limit			
Ettanta at O			centrated solution may cause burns to human tissue
			es throat area and gastro respiratory tract.  s. do not induce vomiting. Seek medical attention.
			nin. consult physician. Skin. Flush with water.
Emergency and	First Aid Procedures		
	S	ECTION	VI — REACTIVITY DATA
	T		Conditions to Avoid
Stability	Unstable		
	Stable	<u> </u>	
ncompatability ( <i>Mai<b>e</b>riels i</i> A			and athen allows
A Hazardous Decomposition	<del></del>	la, Zino	c and other alloys
	, roducts		
Hazardous	May Occur		Conditions to Avoid
Polymerization	Will Not Occur	X	
	Will Not Occur	A.	
	SECTIO	N VII —	SPILL OR LEAK PROCEDURES
Sieps to be Taken in Case	Material is Released or Spilled		
	Dike and absorb	with in	nert material.
Vaste Disposal Method			
	Transfer	to cont	tainer for disposal.
	SECTION VI	II — SPE	CIAL PROTECTION INFORMATION
Respiratory Protection (Spi	city types		
		·	
Ventilation   Local Exhau			Special
	acceptable		
Mechanical	(General)		Other
Protective Gloves	} Eye Protect	Jon	
Ye	3	Splash	n proof goggles
Other Protective Equipmen	I		
	CEO:	TION IV	— SPECIAL PRECAUTIONS
		HUM IX	— SPECIAL PRECAUTIONS
recautions to be Taken in i	Protect from f	reezine	Keep out of réach of children
			neep out of federal of children

# U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

	CERRO COPPER PRODUCTO COMPANY  Required under  Shipbuile Englishmentall English  2255771	
FuPE+43106;	FUPER45 Net :	
MANUFACTURER'S NAME THE STECO CORPORATION  EMERGENCY TELEPHONE NO. 501 375-5644	TECO CORPORATION 501 375-5644	
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 2238, Little Rock, Arkansas 72203	nber, Street, City, State, and ZIP Code) Box 2238, Little Rock, Arkansas 72203	
CHEMICAL NAME AND SYNONYMS Proprietary TAP MAGIC	Ptary TAP MAGIC	
CHEMICAL FAMILY Proprietary Proprietary	etary Proprietary	

SECTION	111 -	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL		_
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURE	S OF (	OTHER LIC	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
1,1,1 - Trichloroethane Over 85%					350 F
Proprietary - less than 15%				NA	
Quantities involved are so s	mal	l as to	preclude the possibility of any	ili e	ffects
Product does not contain Ni	tros	amine.			

SEC	TION III - F	PHYSICAL DATA	
BOILING POINT (°F.)	185	SPECIFIC GRAVITY (H2O=1)	1.3
VAPOR PRESSURE (mm Hg.) 145 @	25°C	PERCENT, VOLATILE BY VOLUME (%)	98+
VAPOR DENSITY (AIR=1)	4.5	EVAPORATION RATE . 5 gal/ft <sup>2</sup> /day	
SOLUBILITY IN WATER	Ins		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA None (open cup) FLAMMABLE LIMITS Uei Lei EXTINGUISHING MEDIA None SPECIAL FIRE FIGHTING PROCEDURES None UNUSUAL FIRE AND EXPLOSION HAZARDS None

		S	ECTION	I V	- HEA	LTH HAZARD [	DATA	
THRESHOLD LIMIT	VALU							
EFFECTS OF OVER	EXPOS	URE						
Sleepiness								
EMERGENCY AND I Fresh air	FIRST	AID PROCED	URES					
							•	
			SECTIO	NC	/I - R	EACTIVITY DA	TA	
STABILITY	UNS	TABLE		co	NDITIO	NS TO AVOID		
	STAI	BLE	X					
INCOMPATABILITY	Mater	rials to avoid)		<u></u>				
HAZĀRDOUS DECO	MPOSI	TION PRODU	ICTS			······································		
		MAY OCCU	B .			CONDITIONS TO	AVOID	
HAZARDOUS POLYMERIZATION		WILL NOT			X			$\dashv$
		WILL NOT	OCCUR -					
		SECT	TION VII	۱ - :	SPILL	OR LEAK PROC	EDURES	
STEPS TO BE TAKE Ventilation	N IN C							
ventilation								$\dashv$
		· r	τ					
WASTE DISPOSAL N	METHO	<u>a.</u> - <u>i</u> -	·					$\dashv$
Volatile			***			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
						~		
		SECTION	VIII - S	:DF	CIAL F	PROTECTION IN	FORMATION	
RESPIRATORY PRO	TECTI					NOTECTION IN		{
		AL EXHAUST					Lengolai	
VENTILATION			_X				SPECIAL	
	MEC	HANICAL (Ge	neral)				OTHER	
PROTECTION Not required								
Not require	E EQU	IPMENT						
		S	ECTION	IX	- SPE	CIAL PRECAUT	IONS	
PRECAUTIONS TO E	BE TAP	KEN IN HAND	LING AND	STO	DRING			
OTHER PRECAUTIO	ns on a	luminum	becau	se (	of pos	ssible corros	ive effects.	$\neg$
								$\neg$

PAGE (2)

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

Required ur Shipt	Englechmental:	AFFECTAL.	Jru-80-8244 8: 	1.
	-847574; -548374837 <u>-</u> 25	**#FICE \#AIO#.		
MANUFACTURER'S NAME THE STECO CORPOR	ATION		i	375 5644
ADDRESS (Number, Street, City, State, q. P. O. Box 2238, Littl	nd ZIP Code) e Rock, Arkans	as 7220	3	
CHEMICAL NAME AND SYNONYMS Proprietary			TATA PAMAGIE	ALUMINUM
CHEMICAL FAMILY Proprietary		FORMULA	Proprietary	

PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURE	SOF	OTHER LI	DUIDS, SOLIDS, OR GASES	×	TLV (Units)
C9 - C16 Hydrocarbons of	the	metha	ne series	60	2000
Product does not contain N	itros	amine	_		

SE	CTION III - I	PHYSICAL DATA		
BOILING POINT (°F.) Initial	283 F	SPECIFIC GRAVITY (H2	0=1)	0.824
VAPOR PRESSURE (mm Hg.) L5 @	250	PERCENT, VOLATILE BY VOLUME (%)	Ambient	5%
VAPOR DENSITY (AIR=1)	5.8	EVAPORATION RATE	Very Slow	
SOLUBILITY IN WATER	Ins			
APPEARANCE AND ODOR Pale yello	w liquid - p	leasant odor	And the second s	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA				
FLASH POINT (Method god) Open cup 1890P	FLAMMABLE ZIMETS	Lei	Uel	
EXTINGUISHING MEDIA Form CO <sub>2</sub> - Dry Chemical Agents	3			
SPECIAL FIRE FIGHTING PROCEDURES None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
	•			

					4
	Si	ECTION V	- HEAL	TH HAZARD	DATA
THE 648 - 788	<del>ያ</del> ያካታ				
EFFECTS OF OVERI	exposure ient euphoria				
	local irritat	ion			
	FIRST AID PROCEDU		-+		
i e	<ul> <li>supportive</li> <li>do not give</li> </ul>				
	, <u> </u>				
	•	SECTION	VI - RE	ACTIVITY DA	TA
STABILITY	UNSTABLE	C	ONDITION	S TO AVOID	
	STABLE	х	Extre	ne heat	,
INCOMPATABILITY	(Materials to avoid)	· <del>!</del>	· ··· • · · · · · · · · · · · · · · · ·		
HAZARDOUS DECO	MPOSITION PRODUC	CTS			
HAZARDOUS	MAY OCCUP	· · · · · · · · · · · · · · · · · · ·		CONDITIONS TO	AVOID
POLYMERIZATION	WILL NOT C	CCUR	x		
	SECT	ION VII -	SPILL C	R LEAK PROC	EDURES
STEPS TO BE TAKE	n in case materi. n inert mater	al IS RELEA	ASED OR SE Wdust	PILLED	
	<u> </u>				
WASTE DISPOSAL N Incinerate	ETHOD				
			<del></del>		
	· · · · · · · · · · · · · · · · · · ·				
	SECTION	VIII - SPE	ECIAL PR	ROTECTION IN	FORMATION
None PRO	TECTION (Specify ty	pe)			
VENTILATION	LOCAL EXHAUST	X			SPECIAL
	MECHANICAL (Ger	ieral)			OTHER
Not require				EYE PROTECTION	uired
OTHER PROTECTIVE					
`. <del>.</del>	SE	CTION IX	C - SPEC	IAL PRECAUT	IONS
PRECAUTIONS TO B	E TAKEN IN HAND	LING AND S	TORING		

PAGE (2)

OTHER PRECAUTIONS None 10 Bake Otte

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration



SIATEDIAL

	SECTION   Amended: September, 1985
MANUFACTURER'S NAME Royal Oil Company	EMERGENCY TELEPHONE NO. (817) 332-7001
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. B	ox 646, Ft. Worth, Texas 76101
CHEMICAL NAME AND SYNONYMS N/A	TRADE NAME AND SYNONYMS Thermal Moly
Petroleum Hydrocarbon	FORMULA Mixture

	× 1	TLV	RDOUS INGREDIENTS	Τ	TLV
PAINTS, PRESERVATIVES, & SOLVENTS	×	(Units)	ALLOYS AND METALLIC COATINGS	*	(Units)
PIGMENTS			BASE METAL		
CATALYSY			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES :			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					TLV (Units)
Under normal conditions of	use.	the oi	l in this product can not be		
misted and the molylodenum			· · · · · · · · · · · · · · · · · · ·		
therefore should cause no h	ealth	probl	ems.		

•	SECTION III -	PHYSICAL DATA	
BOILING POINT (°F.)	>500	SPECIFIC GRAVITY (H20=1)	0.8897
VAPOR PRESSURE (mm Hg.)	< 1	PERCENT, VOLATILE BY VOLUME (%)	Negligible
VAPOR DENSITY (AIR=1)	> 15	EVAPORATION RATE	< 1
SOLUBILITY IN WATER	Neglibib	14	

Smooth, grayish-black grease with mild petroleum hydrocarbon bdor.

SECTION IV - FIRE AND	EXPLOSION HAZARD DAT	A	
FLASH POINT (Method used) > 500°F. (COC)	FLAMMABLE LIMITS Not Determined	Lei	Uel
EXTINGUISHING MEDIA			1
SPECIAL FIRE FIGHTING PROCEDURES Use air-supplied breathing equipment for	or enclosed areas.		
Cool exposed containers with water spra	ay.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	tore with strong oxidar	its.	

use mild irritation.
rcinogens: None Known
r. Eyes: flush with clear water for
physician if irritation persists.
l a physician.
_

		,	SECTIO		EACTIVITY DATA				
STABILITY	UNS	TABLE		CONDITION	CONDITIONS TO AVOID None Known				
ST		∃L€	Х						
HAZARDOUS DECCUXIDES OF C		·		rong Oxi case of					
HAZARDOUS		MAY OCCUR			CONDITIONS TO AVOID  None Known				
POLYMERIZATION		WILL NOT OCCUR X		Х					

		<u> </u>
	SECTION VII - SPILL OR LEAK PRO	•
STEPS TO BE TAKEN IN CASE Clean up with mech	MATERIAL IS RELEASED OR SPILLED anical equipment. Then, if applic	able, wash area with
detergent and wate		
	-	
WASTE DISPOSAL METHOD	Federal, State an/or Local appr	oved Caracal Caraca
	for an oil base material.	ण्याद्वाद्वाद्वाद्वाद्वाद्वाद्वाद्वाद्वाद्व
		FEB 1 9 1986

	SECTION VIII -	SPECIAL PRO	TECTION I	NFORMATIC	COPPER PRODUCTS
RESPIRATORY PE	ROTECTION (Specify type)	Not requi	red under	normal cond	itions
VENTILATION	LOCAL EXHAUST	Not requi		SPECIAL	N/A
	MECHANICAL (General)	Not requi	ed	OTHER	N/A
PROTECTIVE GLO	Not require	d <sup>E</sup>	YE PROTECTIO		required
OTHER PROTECT	IVE EQUIPMENT	Not require	·d		

SECTION IX - SPECIAL PRECAUTIONS							
PRECAUTIONS TO BE T	AKEN IN HANDLING	AND STORIN	Do Do	not	store	at	temperatures above
150°F.							
OTHER PRECAUTIONS	Observe good	personal	hygiene	prac	ctice v	vhen	handling
	lubricant.	•					

PAGE (2)

SUPPLIER INFORMATION

NAME: V. L. LAWSON

SITIE: VICE PRES. A DIR. OF RESEARCH

Form OSHA-20 Rev May 12

## MATERIAL RAFETY DATA SHEET

HE EMERGENCY PHONE HUMB	ER 15: (212)	599	-1333	PAGE 1 OF
SECTION I	IDENTI	IDENTIFICATION		VERSION DATE: \$8/02/84
PRODUCT NAME: THIOUREA				
CHEMICAL SYNCHYMS: .				
CHEMICAL FAMILY:				
PRODUCT CODE: 1161250070			CAS H	JHBER: 00062-54-6
SECTION II	HAZARDOUS	INGRI	DIENTS	THE OWNER OF THE PERSON NAMED IN THE PERSON NA
INGREDIENT		PCHT	HAZARD	DATA
HONE	•			
SECTION III	PHYS	CAL I	ATA	
ELTING POINT:	SOLUBILITY :	IN HAT	TER:	VIRCORITY:
OILING POINT:	PH:	.6	O/L	DROP POINTE
ENSITY: 20°C	* VOLATILE:			IGNITION TEMPERATURE:
PECIFIC GRAVITY:	EVAPORATION	RATE	ı	REFRACTIVE INDEX:
ECOMPOSITION TEMP:	VAPOR PRESSI	URE:		FREEZING POINT:
174-177 °C LOID HUMBER:	VAPOR DENSI	TY:		
APPEARANCE AND ODOR: HITE CRYSTALLINE MATER:	AL .	·····	•	177
SECTION IV	FIRE AND EX	PLOSIC	HAZARDS	
PLASH POINT VALUE SCALE HETHOS	)	EXPL	STAE FINI	T LOHER UPPER

"HICHREA" HENLEY + SONS KALTRED

# MATERIAL SAFETY DATA SHEET

PAGE 2 OF 4

	HAMEI	

)

SECTION IV. CONT.	. FIRE AN	D EXPLOSION HAZ	LARDS	·	
EXTENGUIBHING MEDI CARBON DIOXIDE, WAT	A: ER SPRAY, FOA	M OR DRY CHEMIC	CAL,		
SPECIAL PROCEDURES USE SELF-CONTAINED	BREATHING APP	ARATUS.			
					<u> </u>
UNUSUAL MAZARBS: EMITS HIGHLY TOXIC	FUMES UNDER F	IRE CONDITIONS.	•	•	•
•			•		
SECTION Y	HI	ALTH INFORMATIO	DN		
EFFECTS OF OVEREXI TRATANT TO SKIN. DEPRESSANT OF BONE RETARDS BLOOD COAG THYROID ENLARGEMENT	MARROW WITH A	NHEMIA, INHIBIT NTITIS, ECZEMA,	S IODINE RECEPTI SKIN SENSITIZAT	ION, IION AHD	
TOXICITY: TEST ORL-RAT DML-RBT IHL-RAT	DOSE LDS0 LDS0 LCS0	UPPER LIHIT 1750 >2800 2170	Marka Marka Nar	DURATION	
POSSIBLE CANCER HA	ZARD BASED ON	TESTS WITH LAB	ORATORY ANIMALS.	•	
SECTION VI	OCCUPATIONAL	EXPOSURE LIMIT			
THRESHOLD LINIT-			/cm2+		
TEXT: NOT ESTABLISHED.	•	· · · · · · · · · · · · · · · · · · ·	, <del>-</del>		
SECTION VII	Dierency and	FIRST AID PROC	Edure		
ENHALATION: CONSULT PHYSICIAN	IF IRRITATION	OF RESPIRATORY	PASSAGES OCCUR	3.	
EYE CONTACT! FLUSH THOROUGHLY W					

8

# .PRODUCT NAME: THIOUREA

SECTION	VII, CONT.	EMERGENCY AN	D FIRST AID PROCEDU	RES
SKIN CON IMMEDIATE THOROUGHL	TAGT: LY REMOVE CONTAIN Y WITH SOAP AND	INATED CLOTH	ING AND WASH AFFECT	ED AREA
INGESTIC GIVE LARG GET IMMED	M: SE AMOUNTS OF HAT DIATE MEDICAL HEL	ER. P.	·	
ADMINISTE	AL MEASURES: R ARTIFICIAL RES ENSES SHOULD HOT	PIRATION IF	BREATHING HAS STOPF H WORKING WITH THIS	PED. B CHEMICAL.
SECTION	AIII	REACTIV	ITY DATA .	
CHEM	UNSTABLE. X	STABLE	HAZARDOUS POLYMEN	X HILL NOT DOCUM
COMPITI	SHE TO AVOID!			
HAZARDO	JÁ DECOMPOSITION	PRODUCTS:		
BECTION	17 (	PILL OR LEAD	( PROCEDURES	
SPILL DI COLLECT	R LEAK PROGEDURE INTO SUITABLE CO	A: MTAIHER.		
	•			
DISPOSE LISTED A	S A HAZARDOUS SU	BSTANCE, AS	CE WITH LOCAL REGUL DEFINED IN THE COMP AND LIABILITY ACT	BEHENSIVE

PRODUCT NAME:	MATERIAL SAFETY DATA SHEET	PAGE 4 OF 4
SECTION X	EMPLOYEES PROTECTION:	
RESPERATORY PI DUST MASK RECO	rotegtion: Mended.	
PROTECTIVE CLOCKING SUITA LOTHING SUITA LAFETY GLASSES LUBBER GLOVES.	BLE TO PREVENT SKIN CONTACT.	
ADDITIONAL ME 18E LOCAL VENT	ASURES: ILATION.	
SECTION XI	SPECIAL PRECAUTIONS	
HONE		
	* :	•
SECTION XII	TRANSPORTATION AND OTHER REGULATORY	equirehents
DOT PROPER &	HIPPING NAME:	
DOT GLABSIFI HAZARDGUS SUB UN/NA:	SATION STANCE, LIQUID OR SOLID, HOS/ORM-E	
OTHER DOT RE	QUEREMENTS:	
OTHER REGULA	TORY CONTROLS:	
		4

CERRO COPPER PRODUCTS COMPA: CCFC-00-0247 1505 NUMBER : :

~ -

CHARLIA HARBAULH

المتناعلين في الراج حام أو المناطقة الم

MATERIAL SAFETY DATA SHEET CLAYTON CHEMICAL COMPANY

EFFECTIVE DATE: JUNE 1, 1988

PRODUCT NAME: RECYCLED TRICHLOROETHYLENE

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : ::

TRICHLOROETHYLENE (NOMINAL)

.972:

SECTION 1

PHYSICAL DATA

BOLLING POINT: 189F (87C) 7AP PRESS: 60 MMHG AT 20C VAP DENSITY (AIR=1): 4.53

: SP. GRAVITY: 1.46 AT 5/25C

: T VOLATILE BY VOL: 100 (ESSENT)

: SOL. IN WATER: 0.1 G/100G AT 25C

APPEARANCE AND ODOR: COLORLESS LIQUID.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE METHOD USED: TCC

: FLAMMABLE LIMITS

: LFL: 7.8VOL% 100CUFL: 52 VOL% 100C

EXTINGUISHING MEDIA: WATER FOG.

8.0 VOL# 25C 10.5 VOL# 25C

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: Pressure demand self-contained respiratory protection. Strong unpleasant odor. Not considered a flanmable liquid under normal industrial use conditions. Autoignition temperature is 788F, 420C.

SECTION 3

REACTIVITY DATA

STABILITY: Avoid open flames, welding arcs, or other high temperature sources which induce thermal decompostion.

2000 MPATIBILITY: Strong bases: Caustic Soda, Caustic Potash.

HAZARDOUS DECOMPOSITION PRODUCTS: Involvement in fire forms hydrogen chloride and very small amounts of phosgene & chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS: SMALL SPILLS:

Mop up, wipe up or soak up immediately. Remove to out of doors. LARGE SPILLS: Evacuate area. Contain Equid; transfer to closed metal containers. Keep out of water

DISPOSAL METHOD: (In order of preference) Send solvent to licensed reclaimer, incineration, evaporation of very small quantities, or approved landfill burial in compliance with local, state, and federal regulations. Sumping into sewers, on the ground, or into any body of water is strongly discouraged, and may be illegal.

HEALTH HAZARD DATA

#### TECTION 3

TYE: Pain and irritation, but no (or only minor) corneal injury likely.

SKIN CONTACT: Short contact - no irritation. Prolonged or repeated contact - moderate irritation and irring may occur. If confined to skin - pain and a burn.

SKIN ABSORPTION: Very low toxicity; not a hazard.

INCESTION: Low acute oral toxicity in rats, LD50 4 G/KG. But may be moderately toxic in humans.

NHALATION: ACGIH TLV is 50 PPM and OSHA guide is 100 PPM.

SYSTEMIC & OTHER EFFECT: Anesthesia. Prolonged or repeated exposures to levels over 100 39M possible organic injury. Can cause death if too much is breathed. Studies with toxic doses given by stomach tube idicated a carcinogenic response in one strain of laboratory mice, but not in other laboratory animals exposed by ingestion or inhalation. The preponderance of information indicates trichloroethylene is not likely to be a carcinogen in man.

SECITON 6

FIRST ALD

EYES: Irrigate with flowing water immediately and continuously for fifteen minutes. Refer to medical personnel.

5KIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Call a physician. Wash clothing before reuse.

INGESTION: Do not induce vomiting. Call a physician or transport to emergency facility.

NHALATION: Remove to fresh air if effects occur. If respiration stops, give mouth-to-mouth resuscitation Call physician and/or transport to medical facility.

NOTE TO PHYSICIAN:

EYES: May cause moderate irritation. Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steriod preparation frequently. Consult ophthalmologist.

SKIN: May cause mild irritation. Chronic exposure may cause defatting type of dermatitis. Treat as any contact dermatitis.

RESPIRATORY: May cause drunkenness. Anesthetic or narcotic effect may occur. Administer oxygen is available. Bronchodilators, expectorants, and antitussives may be of help. Mechanical support of respiration may be needed.

IRAL: May cause chemical pneumonia if aspirated into lungs. If lavage is performed, suggest endotrachea and/or esophagoscopic control. Low in toxicity.

SYSTEMIC: May increase myocardial irritability. Avoid epinephrine or similar acting drugs if at all possible liver and kidney injury possible with overexposure. May cause nausea or vomiting. Alcohol consumed before and after exposure may increase injury. No specific antidote. Consult standard literature. Supportive care.

SECTION 6

SPECIAL HANDLING INFORMATION

SENTILATION: Recommend control of vapors to suggested guide.

RESPIRATORY PROTECTION: Approved respiratory protection required in absence of proper environmenta control. For emergencies, a self-contained breathing apparatus or a full-face respirator is recommended.

PROTECTIVE CLOTHING: None required.

EYE PROTECTION: Safety glasses without side shields.

SECTION 7 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Handle with reasonable care. Avoid breathin: vapors. Store in cool place. Vapors of this product are heavier than air and will collect in low areas such a pits, degreasers, storage tanks, and other confined areas. Do not enter these areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance.

# CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0249

Tro/1403 Sudsing Skin Cheaner

U.S. DEPARTMENT OF LABOR
WORKPLACE STANDARDS ADMINISTRATION
BUREAU OF LABOR STANDARDS
MATERIAL SAFETY DATA SHEET

COLD TOTAL

Troy General Links and Jan.

(Essentially similar to 0.S.H.A. Form 20)

# SECTION I

TROY CHEMICAL INDUSTRIES, INC. - BOX 430 - 17040 RAPIDS ROAD - BURTON, OH 44021

EMERGENCY TELEPHONE NOS: (216) 834-4408, 834-4309, 548-5777

REVISION DATE: 07-16-85

PRODUCT NAME: TROY 1403 SUDSING SKIN CLEANER

CHEMICAL NAME & SYNONYMS: N/A

բաննեցուն հելույում (ԳԲՄ)

CHEMICAL FAMILY: A CLEANING COMPOUND

FORMULA: A PROPRIETARY PRODUCT

# SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

NONE

TLV % (Units)

# SECTION III - PHYSICAL DATA

Boiling Point (Deg. F.): N/A

Specific Gravity (H<sub>2</sub>0=1): 1.01

Percent volatile by volume (%): N/A

Vapor Pressure (mm Hg.): N/A

Vapor Density (Air = 1): N/A

Evaporation Rate (Ethyl Ether = 1): N/A

Slower than ether

Solubility in Water: COMPLETE

Appearance & Odor: WHITE PASTE - FLORAL ODOR

# SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Lel Uel

Flash Point (Method Used): N/A

Flammable Limits:

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: N/A

# SECTION V - HEALTH HAZARD DATA

Threshold Limit Value: NONE ESTABLISHED

Effects of Overexposure: NONE

Emergency and First Aid Procedures:
CONTAINS SODIUM LAURYL SULFATE - SHAMPOO GRADE - WHICH MAY BE IRRITATING TO
TO THE EYES. IN CASE OF EYE CONTACT, FLUSH IMMEDIATELY WITH WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN.

# SECTION VI - REACTIVITY DATA

Stability: STABLE

Incompatability: DO NOT MIX WITH OTHER PRODUCTS Hazardous Decomposition Products: NONE KNOWN Hazardous Polymerization: WILL NOT OCCUR

# SECTION VII - SPILL OR LEAK PROCEDURES

Steps To Be Taken in Case Material Is Released or Spilled: DISPOSE OF IN ACCORDANCE WITH FEDERAL SALE - LOCAL REGULATIONS

Waste Disposal Method: FLUSH INTO SEWER SYSTEM

## SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): N/A

Ventilation:

Protective Gloves: N/A
Eye Protection: N/A

Other Protective Equipment: N/A

#### SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing:
STORE AT ROOM TEMPERATURE. DO NOT EXPOSE TO EXCESSIVE HEAT Other Precautions: N/A

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

b:1403.MSD 071685

Vitritied Bonded Abrasive

# U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Product

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0252
APPROVALS:

Required una 3-20-86 Shipbu

SECTION I						
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.					
STERLING ABRASIVE PRODUCTS COMPANY	(419) 447-9321					
ADDRESS (Number, Street, City, State, and ZIP Code) 525 WALL STREET, TIFFIN, OHIO 44883						
CHEMICAL NAME AND SYNONYMS VITRIFIED BONDED ABRASIVE PRODUCT	A OR C ABRASIVE & V BOND					
OXIDE OR CARBIDE & SILICATES  FORMUL AL_C	OR SIC & SILICATE GLASSES					

SECTION II - HAZARDOUS INGREDIENTS					
CHEMICAL NAME	COMMON NAME	CAS #	OSHA PEL	ACGIH TLV	CARCINOGEN Y/N
Aluminum Oxide or	Alumina	1344-28-1	15 Mq/M <sup>3</sup>	10 Mg/M <sup>3</sup>	N
Silicon Carbide	Carbide	7440-67-21	15 Mg/M <sup>3</sup>	10 Mg/M <sup>3</sup>	N
Plus one or more of the following:					
Titanium Dioxide Glass/Porcelain Sulfur Paraffin	Titania N/A N/A Wax	13463-67-7 N/A 7704-34-2 8002-74-2	15 Mg/m <sup>3</sup>	10 Mg/M3 10 Mg/M3 10 Mg/M3 2 Mg/M	N N N

	SECTION III - I	PHYSICAL DATA	
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H20=1)	N/A
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Soli	d - May give	off slight odor if trea	ted

SECTION IV - FIRE AND EXPLOSION HAZARD DATA							
FLASH POINT (Method used) N/A	IFLAMMABLE LIMITS	N/A	Vei N/A				
EXTINGUISHING MEDIA  Water or CO		··					
SPECIAL FIRE FIGHTING PROCEDURES	one						
UNUSUAL FIRE AND EXPLOSION HAZARDS	one						

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE 10 Mg/M AL <sub>2</sub> O <sub>3</sub> or SiC
Inhalation - coughing, shortness of breath; skin - irritation; eyes -
irritation; ingestion - no none effects but not recommended
EMERGENCY AND FIRST AID PROCEDURES  Inhalation - remove to fresh air, Obtain medical assistance if needed
Skin - wash with soap & water; Eyes - flush with large amounts of clean water -
obtain medical assistance.

		S	ECII	ION VI - REACTIVITY DATA				
STABILITY	UNS	TABLE		Avoid strong acids, bases, extreme heat or cold				
	STA	STABLE		or sudden temperature change				
INCOMPATABIL	ITY Male	riuls to avoid)		None				
HAZARDOUS D Dust arisir	ecompos a from	TION PRODUCT USA Should	s be_c	controlled within TLV's				
HAZARDOUS POLYMERIZATION		MAY OCCUR		CONDITIONS TO AVOID N/A				
		WILL NOT OC	CUR	X N/A				

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  Normal clean-up	
No special steps needed	
waste disposal method Standard landfill methods consistent with federal, state and local laws	5
WASTE DISPOSAL METHOD Standard landfill methods consistent with federal, state and local laws	5

	SECTION VIII - SPECIAL P					
MSHA OF NIOSH	approved respirator may be r	9 CFR 1910:13 equired if TL	4 V's exceeded			
VENTILATION	approved respirator may be recommended - see ANSI Z43.	R-1910:94	Dependant on workpiece			
	Recommended - see ANSI Z43.1	CFR 1910:94	OTHER N/A			
As desired by operator Required - see OSHA 29 CFR 1910.133						
Apron and face shield as desired - hearing protection - see OSHA 29 CFR 1910.95						

#### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid mechanical damage: handle and store in accordance with ANSI B7.1 - allow wheels

to warm to room temperature before using.

OTHER PRECAUTIONS Always use wheels in accordance with ANSI B7.1, ANSI Z43.1 and OSHA
29 CFR 1910.215. Never use wheels suspected of being dropped, cracked or damaged.

Always use a safety guard. Never exceed the maximum operating speed marked on the
wheel

PAGE (2)

GPO 934-190

Form OSHA-20 Rev. May 72 Oc

84FETY:\_\_\_\_\_(85138) 34 F08CHASING:\_\_\_\_\_\8188).\_\_\_\_ FORM ADDITION OF THE PROPERTY OF THE PROPERTY

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

. SE	CTION I	Amended November, 1985
MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
Panther Chemical Co., Inc.		(817) 834-7164
ADDRESS (Number, Street, City, State, and ZIP Code) 600 N. Beach St., P.O. Box 961001, F	ort Worth, Tex	as 76161
CHEMICAL NAME AND SYNONYMS N/A		DE NAME AND SYNONYMS WED-129
CHEMICAL FAMILY	FORMULA	
General Purpose Liquid Cleaner	N/.	<u> </u>

i II -	HAZAI	RDOUS INGREDIENTS			
×	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)	
		BASE METAL			
		-ALLOYS			
		METALLIC COATINGS			: 
		FILLER METAL PLUS COATING OR CORE FLUX			
		OTHERS			
S OF	OTHER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)	
	(-	TWA - 120 mg/m <sup>3</sup> )	5	50ppm	(skin)≯
	(/	ACGIH-TLV-25 ppm skin)			
9 CF	R 1910	.1000, Table Z-1			
	S OF C	X TLV (Units)	# (Units) ALLOYS AND METALLIC COATINGS  BASE METAL  -ALLOYS  METALLIC COATINGS  FILLER METAL PLUS COATING OR CORE FLUX	* TLV (Units) ALLOYS AND METALLIC COATINGS *  BASE METAL  -ALLOYS  METALLIC COATINGS  FILLER METAL PLUS COATING OR CORE FLUX  OTHERS  SOF OTHER LIQUIDS, SOLIDS, OR GASES *  (TWA - 120 mg/m³)  (ACGIH-TLV-25 ppm skin)	* TLV (Units)  BASE METAL  -ALLOYS  METALLIC COATINGS  FILLER METAL PLUS COATING OR CORE FLUX  OTHERS  (TWA - 120 mg/m³)  (ACGIH-TLV-25 ppm skin)

	SECTION III - P	HYSICAL DATA	
BOILING POINT (°F.)	212°F.	SPECIFIC GRAVITY (H20=1)	1.07
VAPOR PRESSURE (mm Hg.)	as water	PERCENT, VOLATILE BY VOLUME (%)	88.2
VAPOR DENSITY (AIR=1)	as water	EVAPORATION RATE	as water
SOLUBILITY IN WATER	infinite	pH (50% sol.)	12.4
APPEARANCE AND ODOR Clear	Fluorescent pin	k liquid with detergent od	or

FLASH POINT (Method used) None	FLAMMABLE LIMITS	Lei	Uel
EXTINGUISHING MEDIA  Not applicable	11//		1
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V - HEALTH HAZARD DATA
Not established - See Section II
effects of overexposure Prolonged skin contact may cause moderate skin irritation.
Irritating to eyes. Carcinogens - None known.
EMERGENCY AND FIRST AID PROCEDURES Flush affected skin or eyes with water for 15 minutes. Eye contact: Seek
immediate medical attention. If swallowed: Give one or two glasses of milk
or water. Call a physician immediately.

	SECTIO	N A1 - K	EACTIVITY DATA	
UNSTABLE	UNSTABLE		NS TO AVOID N/A	
STABLE	X			
(Materials to avoid)	Acids	,		
MPOSITION PRODU	CTS			
MAY OCCU	R		CONDITIONS TO AVOID	
WILL NOT	WILL NOT OCCUR		N/A	
_	STABLE  (Materials to avoid)  DMPOSITION PRODU-  MAY OCCU!	UNSTABLE  STABLE  (Materials to avoid)  ACI dS  MAY OCCUR	UNSTABLE CONDITION  STABLE X  (Materials to avoid)  Acids  OMPOSITION PRODUCTS  MAY OCCUR	UNSTABLE CONDITIONS TO AVOID  STABLE X  (Materials to avoid)  ACIDS  MAY OCCUR  CONDITIONS TO AVOID

SECTION VIII - SPECIAL PROTECTION INFORMATION							
RESPIRATORY PRO None requi	rection (Specify type) red when used with adequate	ventilation.					
VENTILATION	Sufficient to maintain bel			SPECIAL None			
	MECHANICAL (General) None		OTHER	None			
PROTECTIVE GLOV	es Rubber	Goggles or st	olash	proof safety glasses			
OTHER PROTECTIVE EQUIPMENT None							

# SECTION IX - SPECIAL PRECAUTIONS PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling other precautions Store between 30° - 120°F. Avoid freezing conditions.

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IMPORTANT! The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. No warranty or guaranty, express or implied, is made regarding performance, stability, or otherwise. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions to use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Pederal, State or Local laws.

Form OSHA-20 Rev. May 72



#### WITCO MATERIAL SAFETY DATA S

PRODUCT: Witconate 90 Flake

NFPA HAZARD RATING (0=insignificant; l=slight; 2=moderate; 3=high; 4=extreme):

0 Fire:

Reactivity:0

Toxicity: 1

Special:

SECTION I - WITCO MANUFACTURING DIVISION

[1] Organics Division

Houston,TX 77045

Emergency Telephone: (713)433-7281 1-800-424-9300 CHEM TREC:

[2] 3200 Brookfield [3] CHEMICAL NAME OR FAMILY:

[4] FORMULA:

Linear Dodecylbenzenesulfonate, Sodium Salt

NA

SECTION II - CHEMICAL AND PHYSICAL PROPERTIES

[5] HAZARDOUS DECOMPOSITION PRODUCTS: NA [6] INCOMPATABILITY: NA

[7] TOKIC & HAZARDOUS INGREDIENTS:

None

[8] FORM: Solid

[10] APPEARANCE: Light flakes

[12] SPECIFIC GRAVITY (water=1):0.50

[14] MELTING POINT: NA

[16] % VOLATILE BY % Wt.: NA

[18] VAPOR PRESSURE (mm Hg at 20°C): 1

[20] pH AS IS: pH (): 6-8

[22] VISCOSITY SUS at 100°F:

Less than 100:

Greater than 100: Yes

[9] ODOR: Bland

[11] COLOR: Cream

[13] BOILING PT.: NA

[15] SOLUBILITY IN WATER at 25°C:Soluble

[17] EVAP. RATE (n-BuAc=1): NA

[19] VAPOR DENSITY (air=1): NA

[21] STRONG ACID: STRONG BASE:

STABLE: Yes

[23] CAS #: 25155-30-0

SECTION III - FIRE AND EXPLOSION DATA

[24] For fires involving this material, do not enter without proper protective equipment including self-contained breathing apparatus.

[25] UNUSUAL FIRE AND EXPLOSION HAZARDS:

Yes

[26] FLASH POINT (Method used):

PMCC: 200° F

[27] FLAMMABLE LIMITS Z: NA

[28] EXTINGUISHING AGENTS:

Drychemical: Yes

Waterspray: Yes

co,:

Yes

Foam:

Yes

Waterfog:

Sand/earth: Yes

Other:

None

SECTION IV - HEALTH HAZARD DATA

[29] PERMISSIBLE CONCENTRATIONS (Air):

[30] EFFECTS OF OVEREXPOSURE:

[31] TOXICOLOGICAL PROPERTIES:

NDA

NDA

			Witconate 90 Flake - p.2
	GENCY FIRST AL		
[32]	Eyes:		enty of water for fifteen minutes
		and call a physician.	C - C15h
		Flush with plenty of water	
[34]	Innalation:		ng, remove victim to non-contaminated air.
1261	Tf anallamata	<u> </u>	ng, give fresh air or oxygen.
[ 23]	ii swallowed:	Call a physician.	
		SECTION V - SPECIAL	. PROTECTION INFORMATION
[36]	VENTILATION T	YPE REQUIRED: Mechanical	[37] RESPIRATORY PROTECTION:
[38]	PROTECTIVE GL	OVES:	None
	Plastic coat	ed or rubber	[39] EYE PROTECTION:
			Safety goggles or splash shield
[40]	OTHER PROTECT		
	Protective a	pron	•
		SECTION VI - HANI	DLING OF SPILLS OR LEAKS
[41]	PROCEDURES FO		
	Sweep up and	dispose of in accordance	with federal, state, and local regulations.
[42]	WASTE DISPOSA	L:	
	Ry mathode c	onsistent with federal, st	atc, and local regulations.
	by methods t	•	
	by methods t		
		SECTION VII -	- SPECIAL PRECAUTIONS
[43]	PRECAUTIONS T	SECTION VII - O BE TAKEN IN HANDLING AND	- SPECIAL PRECAUTIONS ) STORAGE:
[43]	PRECAUTIONS T	SECTION VII -	- SPECIAL PRECAUTIONS ) STORAGE:
[43]	PRECAUTIONS T	SECTION VII - O BE TAKEN IN HANDLING ANT n 40° and 120°F in a dry p	- SPECIAL PRECAUTIONS D STORAGE:
	PRECAUTIONS T Store betwee	SECTION VII - O BE TAKEN IN HANDLING AND n 40° and 120°F in a dry p	- SPECIAL PRECAUTIONS D STORAGE: clace - TRANSPORTATION DATA
[44]	PRECAUTIONS T Store betwee UNREGULATED B	SECTION VII -  O BE TAKEN IN HANDLING AND  n 40° and 120°F in a dry p  SECTION VIII -  Y D.O.T.:	- SPECIAL PRECAUTIONS D STORAGE: clace - TRANSPORTATION DATA [45] REGULATED BY D.O.T.: Yes
[44] [46]	PRECAUTIONS T Store betwee UNREGULATED B TRANSPORTATIO	SECTION VII -  O BE TAKEN IN HANDLING AND  n 40° and 120°F in a dry p  SECTION VIII -  Y D.O.T.:	- SPECIAL PRECAUTIONS D STORAGE: Dlace - TRANSPORTATION DATA  [45] REGULATED BY D.O.T.: Yes CHEM TREC 1-(800)-424-9300

- [48] U.S.D.O.T. HAZARD CLASS: ORM-E
- [49] I.D. NUMBER: NA 9146 [50] RQ: 1000 [51] LABEL(S) REQUIRED: None
- [52] FREIGHT CLASSIFICATION: Cleaning Compound
- [53] SPECIAL TRANSPORTATION NOTES: None

	SI	ECTION I	Χ -	NPCA	(HMIS)	RATINGS	
[54] HEALTH:	1					REACTIVITY:	0
FLAMMABILITY:	0					PERSONAL PROTECTION:	С

Well Title: Group Manager - Analytical Signature

Revision Date: 12/85

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use.

# WITCO MATERIAL SAFETY DATA S\_\_\_\_\_

PRODUCT: Witconate 85 Powder

NFPA HAZARD RATING (0=insignificant; 1=slight;2=moderate;3=high;4=extreme):

Fire: 0
Toxicity: 1

Reactivity:0 Special:

SECTION I - WITCO MANUFACTURING DIVISION

[1] Organics Division

Emergency Telephone: (713)433-7281

[2] 3200 Brookfield Houston, TX 77045

CHEM TREC:

1-800-424-9300

[3] CHEMICAL NAME OR FAMILY:

[4] FORMULA:

Linear Dodecylbenzenesulfonate, Sodium Salt

NA

SECTION II - CHEMICAL AND PHYSICAL PROPERTIES

[5] HAZARDOUS DECOMPOSITION PRODUCTS: NA

[6] INCOMPATABILITY: NA

[7] TOXIC & HAZARDOUS INGREDIENTS:

Sodium Dodecylbenzenesulfonate

CAS #: 25155-30-0

[8] FORM: Solid

[10] APPEARANCE: Light powder

[12] SPECIFIC GRAVITY (water=1):0.50

[14] MELTING POINT: NA

[16] % VOLATILE BY % Wt.: NA

18] VAPOR PRESSURE (mm Hg at 20°C): 1

[20] pH AS IS:

pH (): 6-8

[22] VISCOSITY SUS at 100°F:

Less than 100:

Greater than 100: Yes

[9] ODOR: Bland

[11] COLOR: Cream

[13] BOILING PT.: NA

[15] SOLUBILITY IN WATER at 25°C:Soluble

[17] EVAP. RATE (n-BuAc=1): NA

[19] VAPOR DENSITY (air=1): NA

[21] STRONG ACID:

STRONG BASE:

STABLE: Yes

[23] CAS #:

SECTION III - FIRE AND EXPLOSION DATA

[24] For fires involving this material, do not enter without proper protective equipment including self-contained breathing apparatus.

[25] UNUSUAL FIRE AND EXPLOSION HAZARDS:

Yes

[26] FLASH POINT (Method used):

PMCC: 200° F

[27] FLAMMABLE LIMITS Z: NA

[28] EXTINGUISHING AGENTS:

Drychemical: Yes

co<sub>2</sub>:

Yes

Waterspray: Yes

Foam:

Yes

Waterfog:

Sand/earth: Yes

Other:

None

SECTION IV - HEALTH HAZARD DATA

[29] PERMISSIBLE CONCENTRATIONS (Air):

[30] EFFECTS OF OVEREXPOSURE:

NA

NDA

[31] TOXICOLOGICAL PROPERTIES:

NDA

#### EMERGENCY FIRST AID PROCEDURES:

[32] Eyes:

Flush immediately with plenty of water for fifteen minutes

and call a physician.

[33] Skin Contact: Flush with plenty of water for fifteen minutes.

[34] Inhalation:

If difficulty in breathing, remove victim to non-contaminated air.

If laboring with breathing, give fresh air or oxygen.

[35] If swallowed: Call a physician.

#### SECTION V - SPECIAL PROTECTION INFORMATION

[36] VENTILATION TYPE REQUIRED: Mechanical

[37] RESPIRATORY PROTECTION:

[38] PROTECTIVE GLOVES:

Use NIOSH-approved mask to protect

Plastic coated or rubber

against dust - Dustfo-66 type.

[39] EYE PROTECTION:

Safety goggles or splash shield

[40] OTHER PROTECTIVE EQUIPMENT:

Protective apron

#### SECTION VI - HANDLING OF SPILLS OR LEAKS

[41] PROCEDURES FOR CLEAN-UP:

Sweep up and dispose of in accordance with federal, state, and local regulations.

[42] WASTE DISPOSAL:

By methods consistent with federal, state, and local regulations.

#### SECTION VII - SPECIAL PRECAUTIONS

[43] PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store between 40° and 120°F in a dry place

#### SECTION VIII - TRANSPORTATION DATA

[44] UNREGULATED BY D.O.T.:

[45] REGULATED BY D.O.T.: Yes

- [46] TRANSPORTATION EMERGENCY INFORMATION: CHEM TREC 1-(800)-424-9300
- [47] U.S.D.O.T. PROPER SHIPPING NAME: Sodium dodecylbenzenesulfonate
- [48] U.S.D.O.T. HAZARD CLASS: ORM-E
- [49] I.D. NUMBER: NA 9146 [50] RQ: 1000 [51] LABEL(S) REQUIRED: None
- [52] FREIGHT CLASSIFICATION: Cleaning Compound
- [53] SPECIAL TRANSPORTATION NOTES: None

SECTION IX - COMMENTS

[54]

Signature

Title: Group Manager - Analytical

Revision Date: 12/85

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Vitco

# UERRU COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0257 APPROVALE:

ENVIRONMENTAL: :: FRIOR: : EMERT: :- DETERMENTAL: - FRIOR: :

#### WITCO MATERIAL SAFETY DATA 5

PRODUCT: Witconate 85 Flake

NFPA HAZARD RATING (0=insignificant; l=slight; 2=moderate; 3=high; 4=extreme):

Fire:

0

Reactivity:0

Toxicity: 1

Special:

- SECTION	I	 WITCO	MANUFACTURING DIVISION

[1] Organics Division-

Emergency Telephone: (713)433-7281

[2] 3200 Brookfield Houston, TX 77045

CHEM TREC:

1-800-424-9300

[3] CHEMICAL NAME OR FAMILY:

[4] FORMULA:

Linear Dodecylbenzenesulfonate, Sodium Salt

NA

#### - SECTION II - CHEMICAL AND PHYSICAL PROPERTIES

[5] HAZARDOUS DECOMPOSITION PRODUCTS: NA

[6] INCOMPATABILITY: NA

[7] TOXIC & HAZARDOUS INGREDIENTS:

Sodium Dodecylbenzenesulfonate

CAS #: 25155-30-0

[8] FORM: Solid

[10] APPEARANCE: Light flakes

[12] SPECIFIC GRAVITY (water=1):0.40

[14] MELTING POINT: NA

[16] % VOLATILE BY % Wt.: na

[18] VAPOR PRESSURE (mm Hg at 20°C): 1

20] pH AS IS:

pH (): 6-8

[22] VISCOSITY SUS at 100°F:

Less than 100:

Greater than 100: Yes

[9] ODOR: Bland

[11] COLOR: Cream

[13] BOILING PT.: NA

[15] SOLUBILITY IN WATER at 25°C:Soluble

[17] EVAP. RATE (n-BuAc=1): na

[19] VAPOR DENSITY (air=1): NA

[21] STRONG ACID:

STRONG BASE:

STABLE: Yes

[23] CAS #:

#### SECTION III - FIRE AND EXPLOSION DATA

[24] For fires involving this material, do not enter without proper protective equipment including self-contained breathing apparatus.

[25] UNUSUAL FIRE AND EXPLOSION HAZARDS:

[26] FLASH POINT (Method used):

PMCC: 200° F

[27] FLAMMABLE LIMITS %: NA

[28] EXTINGUISHING AGENTS:

Drychemical: Yes

co,:

Yes

Waterspray: Yes

Foam:

Yes

Waterfog: Yes

Sand/earth: Yes

Scher:

None

#### SECTION IV - HEALTH HAZARD DATA

[29] PERMISSIBLE CONCENTRATIONS (Air):

[30] EFFECTS OF OVEREXPOSURE:

NDA

[31] TOXICOLOGICAL PROPERTIES:

EMERGENCY FIRST AID PROCEDURES:

Flush immediately with plenty of water for fifteen minutes [32] Eyes:

and call a physician.

[33] Skin Contact: Flush with plenty of water for fifteen minutes.

If difficulty in breathing, remove victim to non-contaminated air. [34] Inhalation:

If laboring with breathing, give fresh air or oxygen.

[35] If swallowed: Call a physician.

#### SECTION V - SPECIAL PROTECTION INFORMATION

[36] VENTILATION TYPE REQUIRED: Mechanical

[37] RESPIRATORY PROTECTION:

Use NIOSH-approved mask to protect against dust - Dustfo-66 type.

[38] PROTECTIVE GLOVES:

Plastic coated or rubber

[39] EYE PROTECTION:

Safety goggles or splash shield

[40] OTHER PROTECTIVE EQUIPMENT:

Protective apron

#### SECTION VI - HANDLING OF SPILLS OR LEAKS

[41] PROCEDURES FOR CLEAN-UP:

Sweep up and dispose of in accordance with federal, state, and local regulations.

[42] WASTE DISPOSAL:

By methods consistent with federal, state, and local regulations.

#### SECTION VII - SPECIAL PRECAUTIONS

[43] PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store between 40° and 120°F in a dry place

#### SECTION VIII - TRANSPORTATION DATA

[44] UNREGULATED BY D.O.T.:

[45] REGULATED BY D.O.T.: Yes

- [46] TRANSPORTATION EMERGENCY INFORMATION: CHEM TREC 1-(800)-424-9300
- [47] U.S.D.O.T. PROPER SHIPPING NAME: Sodium dodecylbenzenesulf
- [48] U.S.D.O.T. HAZARD CLASS: ORM-E
- [49] I.D. NUMBER: NA 9146
- [50] RQ: 1000 [51] LABEL(S) REQUIRED: None
- [52] FREIGHT CLASSIFICATION: Cleaning Compound
- [53] SPECIAL TRANSPORTATION NOTES: None

SECTION IX - COMMENTS

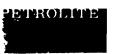
[54]

Signature

Title: Group Manager - Analytical

Revision Date: 12/85

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#### CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0258 М APPROVALS

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ENVIRONMENTAL\_\_\_\_(PRIOR)\_\_\_\_\_ 

PAGE 1

PETROLITE CORPORATION 369 MARSHALL AVE. ST.LOUIS MO 63119 U.S.A

REVISION DATE: 10/26/87 EMERGENCY PHONE: 1-314-961-3500 CHEMTREC EMER NO: 1-800-424-9300

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT: XC 0215

TRADE NAME: X-CIDE

LABEL: 000

097

SHIPPING NAME: NOT HAZARDOUS PER D.O.T. CFR TITLE 49

CHEMICAL DESCRIPTION

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE, 2-METHYL-4-

ISOTHIAZOLIN-3-ONE IN WATER.

SECTION 2 HAZARDOUS INGREDIENTS

\*\*\*\*\*\*\*\*\*\*\*

CAS NUMBER

MATERIAL

%

EXPOSURE LIMITS

26172-55-4 5-chloro-2-methyl-

4-isothioazoline-3-one

1.2 RECOM, 0.1 mg/M3

02682-20-4 2-methyl-4-isothiazolin-3-one .35 Not Established

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION 3 PHYSICAL DATA

SPECIFIC GRAVITY(H20 = 1.0@60 F): 1.026

VAPOR PRESSURE: Not Established

VOLATILITY: N/A

SOL. IN WATER: Soluble

MISC. DATA: pH = 3 - 5

APPEARANCE AND ODOR: Pale yellow to green liquid. Mild aromatic odor.

\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >200 F

FLAMMABLE LIMITS: Not Established

FLASH METHOD:

EXTINGUISHING MEDIA:

Use water spray or fog, alcohol-type foam, dry chemical

or CO2.

FIRE FIGHTING PROCEDURES:

Use a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode. Non-flammable. Keep fire-exposed containers cool using

water spray.

\*\*\*CONTINUED ON PAGE: 2\*\*\*



PAGE 2

\*\*\*CONTINUATION OF XC 0215 \*\*\*

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 5 HEALTH HAZARD DATA

#### EFFECTS OF OVEREXPOSURE:

#### INHALATION:

Inhalation of mists, aerosols or very high vapor concentrations will produce intense eye, nose and respiratory irritation and may result in lung damage. Prolonged exposure may result in chemical pneumonitis and, in extreme cases, pulmonary edema.

INHALATION LC50: >13.7 mg/L (Rat)

#### SKIN AND EYE CONTACT:

Contact with skin will cause moderate to severe irritation or burns. Contact with eyes will result in severe eye irritation or burns, and if not immediately removed, may lead to permanent eye injury.

Repeated skin contact may produce allergic sensitization. In such cases, incidental (minor) contact may cause allergic rashes.

EYE IRR. SCORE:

4 (0=None, 4=Severe)

SKIN IRR SCORE:

3 (0=None, 4=Severe)

DERMAL LD50: >5 g/kg (Rab.)

#### INGESTION:

Causes severe irritation or burns to the mouth and gastrointestinal tract. In extreme cases may cause kidney and liver damage.

ORAL LD50:

3.81 g/kg (Rat)

#### EMERGENCY AND FIRST AID PROCEDURES:

If contacted, wash skin immediately with soap and water. Remove contaminated clothing and wash before reuse. If irritation or burns develop, consult a physician. If in eyes, irrigate with flowing water immediately and continuously for fifteen minutes. Consult a physician. If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

\*\*\*CONTINUED ON PAGE: 3\*\*\*

PAGE 3

\*\*\*CONTINUATION OF XC 0215 \*\*\*

If ingested, DO NOT induce vomiting. If conscious, drink promptly large quantities of water. Call a physician immediately. NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock and convulsion may be necessary.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 6 REACTIVITY DATA

STABILITY:

Stable under normal conditions of storage and use.

INCOMPATIBILITY:

Keep away from strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Oxides of sulfur and nitrogen. HCl.

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION 7 SPILL AND LEAK PROCEDURES

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

IF MATERIAL IS SPILLED OR RELEASED:

Dike and absorb spill using hypochlorite solution\* in combination with inert material (dry sand, earth etc.) and transfer to suitable containers for disposal.

\*Recommended formulation: 8 lbs. calcium hypochlorite (HTH 65% active ingredient), 5 lbs. sodium hydroxide 50% and 77 lbs. water. Sodium hydroxide must be added to maintain alkalinity and prevent the evolution of chlorine gas.

DISPOSAL METHOD:

Place chemical residues and contaminated adsorbent materials into a suitable waste container and take to an approved hazardous waste disposal site. Dispose of all residues in accordance with applicable waste management regulations.

**DECONTAMINATION PROCEDURES:** 

Not appropriate.

RESPIRATORY PROTECTION:

When ventilation is not adequate, use of a NIOSH-approved dust, mist and fume respirator is recommended. In emergency situations, the use of a self-contained breathing unit may be necessary.

\*\*\*CONTINUED ON PAGE: 4\*\*\*

PAGE 4

\*\*\*CONTINUATION OF XC 0215 \*\*\*

#### **VENTILATION:**

General ventilation should be provided to maintain ambient concentrations below nuisance levels. Local ventilation of emission sources may be necessary.

#### PROTECTIVE CLOTHING:

Synthetic gloves (such as rubber, neoprene, nitrile or viton), chemical goggles, face shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

> Avoid breathing of vapors and contact with eyes, skin or clothing. Hazardous product residue may remain in emptied container. Do not reuse container without commercial cleaning or reconditioning.

Although the information and recommendations set forth herein are believed to be correct as of the date hereof, Petrolite makes no representations to the accuracy of such information and recommendations. It is the user's responsibility to determine the suitability and completeness of such information and recommendation for its own particular use. Petrolite shall not be responsible for any direct, indirect, incidental or consequential damages of whatsoever nature resulting from the publication, use of or reliance upon such information and recommendations.

\*\*\*\*\*

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MSDS NUMBER - CCPC-00-0259 APPROVALS

MATERIAL SAFETY DI ENVIRONMENTAL (PRIOR) (PF10R) SAFETY PURCHASING\_\_\_\_(FF!OR)

PETROLITE CORPORATION 369 MARSHALL AVE. ST.LOUIS MO 63119 U.S.A

REVISION DATE: 07/06/89 EMERGENCY PHONE: 1-314-961-3500 CHEMTREC EMER NO: 1-800-424-9300

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION 1 PRODUCT IDENTIFICATION

PRODUCT: XC 0102

TRADE NAME: X-CIDE

LABEL:

SHIPPING NAME: NOT HAZARDOUS PER D.O.T. CFR TITLE 49

CHEMICAL DESCRIPTION

GLUTARALDEHYDE AND WATER.

\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 2 HAZARDOUS INGREDIENTS

CAS NUMBER MATERIAL 00111-30-8 Glutaraldehyde

EXPOSURE LIMITS

25 ACGIH TLV: 0.2 ppm C

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 3 PHYSICAL DATA

SPECIFIC GRAVITY(H20 = 1.0060 F): 1.066 VAPOR PRESSURE: Not Established

VOLATILITY: N/A SOL. IN WATER: Soluble

APPEARANCE AND ODOR: Light amber liquid. Characteristic odor.

\*\*\*\*\*\*\*\*\*\*\*\*

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >200 F

FLAMMABLE LIMITS: Not Established

FLASH METHOD:

SFCC ASTM D-3828

EXTINGUISHING MEDIA:

Material is non-flammable. Use water spray, foam, CO2 or any other media suitable for extinguishing materials supporting combustion.

FIRE FIGHTING PROCEDURES:

Use a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode. Non-flammable. Keep fire-exposed containers cool using water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None known.

\*\*\*CONTINUED ON PAGE: 2\*\*\*

PAGE 2

\*\*\*CONTINUATION OF XC 0102 \*\*\*

\*\*\*\*\*\*\*\*\*\*\*

#### SECTION 5 HEALTH HAZARD DATA

#### EFFECTS OF OVEREXPOSURE:

#### INHALATION:

Vapors are moderately to highly irritating to eyes, nose and respiratory system. Prolonged exposure to excessive concentrations may result in delayed lung injury as well as kidney and liver damage.

#### SKIN AND EYE CONTACT:

Contact with skin will cause moderate to severe irritation or burns. Contact with eyes will result in severe eye irritation or burns, and if not immediately removed, may lead to permanent eye injury.

Repeated skin contact may produce allergic sensitization. In such cases, incidental (minor) contact may cause allergic rashes.

#### INGESTION:

Causes severe irritation or burns to the mouth and gastrointestinal tract. In extreme cases may cause kidney and liver damage.

#### EMERGENCY AND FIRST AID PROCEDURES:

If contacted, wash skin immediately with soap and water. Remove contaminated clothing and wash before reuse. If irritation or burns develop, consult a physician. If in eyes, irrigate with flowing water immediately and continuously for fifteen minutes. Consult a physician. If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

If ingested, DO NOT induce vomiting. If conscious, drink promptly large quantities of water. Call a physician immediately. NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock and convulsion may be necessary.

SECTION 6 REACTIVITY DATA

# \*\*\*\*\*\*\*\*\*\*\*

#### STABILITY:

Stable under normal conditions of storage and use.

#### INCOMPATIBILITY:

Avoid contamination with acids and alkalies.

#### HAZARDOUS DECOMPOSITION PRODUCTS:

None known.

\*\*\*CONTINUED ON PAGE: 3\*\*\*

PAGE 3

\*\*\*CONTINUATION OF XC 0102 \*\*\*

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION 7 SPILL AND LEAK PROCEDURES

#### IF MATERIAL IS SPILLED OR RELEASED:

Small spill - Absorb on paper, cloth or other material.

Large spill - Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Cover residue with dirt, or suitable chemical adsorbent. Use personal protective equipment as necessary.

#### DISPOSAL METHOD:

This product is a registered industrial antimicrobal product. Please refer to product label for disposal instructions.

DECONTAMINATION PROCEDURES:

Not appropriate.

#### RESPIRATORY PROTECTION:

When concentrations exceed the exposure limits specified, use of a NIOSH-approved supplied air respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a self-contained breathing unit may be necessary.

#### **VENTILATION:**

General ventilation should be provided to maintain ambient concentrations below nuisance levels. Local ventilation of emission sources may be necessary to maintain ambient concentrations below recommended exposure limits.

#### PROTECTIVE CLOTHING:

Chemical-resistant gloves and chemical goggles, face shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

Avoid breathing of vapors and contact with eyes, skin or clothing. Hazardous product residue may remain in emptied container. Do not reuse container without commercial cleaning or reconditioning.

\*\*\*CONTINUED ON PAGE: 4\*\*\*



PAGE 4

\*\*\*CONTINUATION OF XC 0102 \*\*\*

This product is a registered industrial antimicrobal product. Please refer to the product label for drum cleaning instructions.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Although the information and recommendations set forth herein are believed to be correct as of the date hereof, Petrolite makes no representations to the accuracy of such information and recommendations. It is the user's responsibility to determine the suitability and completeness of such information and recommendation for its own particular use. Petrolite shall not be responsible for any direct, indirect, incidental or consequential damages of whatsoever nature resulting from the publication, use of or reliance upon such information and recommendations.

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# **ENVIRONMENTAL DATA SHEET**

PAGE 1

PETROLITE CORPORATION
369 MARSHALL AVE.
ST. LOUIS MO 63119 U.S.A.

REVISION DATE: 05/17/90 EMERGENCY PHONE: 1-314-961-3500 CHEMTREC EMER NO: 1-800-424-9300

\*\*\*\*\*\*\*\*\*

XC 0102

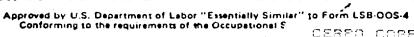
#### SARA TITLE III, SECTION 313

This notification is incorporated into the Material Safety Data Sheet (MSDS) for the Petrolite product named above. When physically attached to the MSDS, this notification must not be detached from the MSDS. Any copying and redistribution of the MSDS to which this notification is attached must include copying and redistribution of this notification.

This Petrolite product contains no toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372 in excess of the applicable de minimis concentration.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*







INTERNATIONAL		Conforming to the requ	uirements of the (	Occupational S	Mada	HUMBER -	- RODUCTS CO - C <b>UPU-06</b> - 013;	OMPANY OZGO
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RMULA: -	– propr	rietary	•	MOLECUL	AR WEIGHT	:		
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ECAUTIONAF	RY LABELING	Keep out of Harmful if s	reach of chil wallowed.	dren.			* * * * * * * * * * * * * * * * * * *	• .
HER HANDLI ORAGE COND		Store in coo	l, dry place.	Keep drum	a closed.	: .		•

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#### CONOCO Material Safety Data Sheet

Page

MATERIAL IDENTIFICATION

TURBINE OIL

MSDS NUMBER

: LUBC0410

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0261

Revision Date

: 07-Mar-91

APPROYALS:

: 07-Mar-91 Date Printed

ENVIRONMENTAL: SAFETY: PURCHASING:

MANUFACTURER/DISTRIBUTOR

Conoco Inc. P.O. Box 2197

Houston, TX 77252

PHONE NUMBERS

GENERAL INFORMATION : 1-(713)293-5550 TRANSPORT EMERGENCY : 1-(800)424-9300 MEDICAL EMERGENCY : 1-(800)441-3637

: 32, 46, 68, 100, 32S : Petroleum Hydrocarbons

TRADE NAMES / SYNONYMS

CHEMICAL FAMILY

7319, 7320, 7321, 7322, 7325

Petroleum Lubricating Oil, Turbine Oils

CAS NUMBER

: Mixture; See Regulatory Information

DU PONT REGISTRY NUMBER: DP414-88-4

NFPA RATINGS NPCA-HMIS RATINGS : Health: 0 Flammability: 1 Reactivity: 0 : Health: 1 Flammability: 1 Reactivity: 0

Personal Protection rating to be supplied by

user depending on use conditions.

WHMIS CLASSIFICATION

This is not a WHMIS controlled product.

#### OSHA HAZARD DETERMINATION

#### Hazardous Ingredients

Components of this material are not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

Refer to the Regulatory Information Section of this MSDS for other federal and state regulatory information.

#### PHYSICAL DATA

Boiling Point : 650 to 1060 deg F Vapor Pressure : Nil

Vapor Density : >1 (Air = 1.0) % Volatiles : Nil

Evaporation Rate : Nil

Water Solubility : Insoluble : Pungent sweet Odor

Form : Liquid : Light brown Color

Specific Gravity: 0.86-0.87 (Water = 1)

#### HAZARDOUS REACTIVITY

Instability : Stable.

Incompatibility: Incompatible with strong oxidizing agents. Avoid

sparks and flame.

: Normal combustion forms carbon dioxide; incomplete Decomposition

combustion may produce carbon monoxide. Polymerization will not occur.

Polymerization

#### FIRE AND EXPLOSION DATA

Flash Point : 285-380 deg F

Method : PM

Autoignition : 650-680 deg F

#### FIRE AND EXPLOSION HAZARDS

Class IIIB Combustible Liquid (NFPA).

#### EXTINGUISHING MEDIA

Water Spray. Foam. Dry Chemical. CO2.

#### SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

#### HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Mouse skin painting studies have shown that highly solvent-refined petroleum lubricating oils, which are similar to ingredients in this product, have not caused skin tumors. The product, as with many petroleum products, may cause minor skin, eye, or lung irritation, especially if poor hygienic practices or inadequate engineering design allow prolonged or repeated exposure.

#### CARCINOGENICITY

None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

### EXPOSURE LIMITS

TURBINE OIL

TLV (ACGIH) : None Established PEL (OSHA) : None Established

#### **SAFETY PRECAUTIONS**

Wash thoroughly after handling. Wash clothing after use.

#### FIRST AID

#### INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physicia

#### SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If irritation develops, consult a physician.

#### EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

#### INGESTION

If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

# CONOCO Material Safety Data Sheet

(FIRST AID - Continued)

#### NOTES TO PHYSICIAN

Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400mL water and mix thoroughly. Administer 5mL/kg, or 350mL for an average adult.

#### PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES AND PRECAUTIONS
Ventilation: Normal shop ventilation.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: None normally required except under unusual circumstances such as described in the Fire and Explosion Section.

Protective Gloves: Should be worn when the potential exists for prolonged or repeated skin contact. NBR or Neoprene recommended.

Eye/Face Protection: Safety glasses with side shields if splashing is probable.

Other Protective Equipment. Coveralls if splashing is probable. Launder contaminated clothing before reuse.

#### SPILL, LEAK AND DISPOSAL INFORMATION

SPILL, LEAK, OR RELEASE

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

#### WASTE DISPOSAL

Tratent, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in an approved and permitted incinerator. Do not flush to surface water or sanitary sewer system.

Page

SHIPPING INFORMATION

DOT

Proper Shipping Name : Not regulated.

IATA/IMO

Proper Shipping Name : Not restricted.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

TITLE III HAZARD CLASSIFICATIONS

: No Acute Chronic : No Fire : No Reactivity : No Pressure : No

#### REGULATORY INFORMATION

#### OSHA HAZARD DETERMINATION

The material is not hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

#### EPA DETERMINATIONS

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT (CERCLA/SUPERFUND), 40 CFR 302 Not applicable; this material is covered by the CERCLA petroleum exclusion. Releases are not reportable.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III (SARA) - SECTIONS 302, 304, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR

The material is not known to contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

#### CONOCO Material Safety Data Sheet

(REGULATORY INFORMATION - Continued)

The material is not known to contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA) (40 CFR 710)
The material is a mixture as defined by TSCA. The
chemical ingredients in this material are in the Section
8(b) Chemical Substance Inventory (40 CFR 710) and/or are
otherwise in compliance with TSCA. In the case of
ingredients obtained from other manufacturers, Conoco
relies on the assurance of responsible third parties in
providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If it is a hazardous waste, regulations 40 CFR 262-266 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, Section 311
The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient : Petroleum Hydrocarbons Reportable Quantity : Film or sheen upon or

discoloration of the water surface or adjoining shoreline.

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178. Not Applicable

#### FOREIGN REGULATIONS

CANADIAN PRODUCTS ACT (WHMIS)
The material is not a WHMIS Controlled Product.

#### STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")
The material contains ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Read and follow label directions and use care when handling or using all petroleum products.

(REGULATORY INFORMATION - Continued)

Ingredient(s) : Formaldehyde (<0.00025%)</pre>

Ethyl Acrylate (<0.00025%) as residue

PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT This material is not known to contain any ingredient(s) subject to the Act. Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Pennsylvania Worker and Community Right-to-Know Act.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANT (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, TH MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

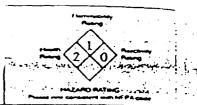
Responsibility for MSDS

: Safety, Health, & Env. Affairs Conoco Inc. PO Box 2197 Houston, TX 77252 713/293-5550

End of MSDS

CERRO COPPER PRODUCTO COM COM MSDS NUMBER - CCPC-00-0263

14-169 = 38 MATERIAL SAFETY DATA SHEET ( FISHER SOIL



SECTION I NAME AND PRODUCT

Section Transpar	57 NOBOC1	
MANUFACTURERS NAME	1269 CONTACT	
NORTON COMPANY, PERFORMANCE PLASTICS	O'V ROBERT CHARTON	•
ADDRESS (STREET, CITY, STATE AND ZIP CODE)	EMERGENCY TELEPHONE NO.	
2664 GILCHRIST RD., AKRON, OH 44305	216-798-9240	
TRADE NAME, COMMON NAME OR SPECIFICATION	APPROVED BY R.A.C.	
TYGON® R-3603 (**)	DATE 4/88	
CHEMICAL FAMILY OR PRODUCT TYPE POLYVINYL CHIOR IDE COMPOUNT	NED OPCANIC POLYMED	

#### SECTION II COMPOSITION

CHEMICAL NAME CONTAINS:	COMMON NAME	REG.*	CAS .	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCIN- OGEN" (YN)
DI-2-ETHYLHEXYL PHTHALATE	DOP OR DEHP	Y	117-81-7	5 MG/M <sup>3</sup> ·	5 MG/M TWA	SUSPECT
				TWA	10 MG/M <sup>3</sup>	
					STEL	

ALL ADDITIVES ARE PHYSICALLY BOUND IN THE MANUFACTURING PROCESS & ARE NOT EXPECTED TO CREATE ANY HAZARD WHEN THE PRODUCT IS USED & HANDLED IN ACCORDANCE WITH NORMAL MANU-FACTURING & INDUSTRIAL HYGIENE PRACTICE & BY FOLLOWING THE GUIDELINES ON THIS SHEET.

IN REFERENCE TO 40CFR, SECTION 313, PART 372, COMMUNITY RIGHT TO KNOW, WE CLASSIFY TYGON® TUBING AS AN "ARTICLE" & THEREFORE NOT SUBJECT TO NOTIFICATION REQUIREMENTS.

Materials are regulated by OSHA 29 CFR 1910.1200. Hazard Communication Standard, and/or the Massachusetts General Law Chapter 111F, Right To Know Regulations

·		SECTION III PHYSICA	AL AND CHEMICAL D	ATA .		
BOILING POINT NA	•	MELTING POINT NA		SPECIFIC GRAVITY 1.18		
WAPOR PRESSURE 7 X 10-	MM HG 20°C			WAPOR DENSITY NA		
EVAPORATION RATE NA		SOLUBILITY IN WATER N	EGLIGIBLE	SOMBILITA IN ALCOHOL NATE		
SOLUBILITY IN OTHER SOLVENT			APPEARANCE AND ODOF			
	NAIF		CLEAR TUBING;	SLIGHT ODOR		
	SE	CTION IV FIRE AND	EXPLOSION HAZARD	DATA		
FLASH POINT 500°F	(1)	METHOD USED) ASTM	D1929	FLAMMABLE LIMITS LEL NA UEL NA		
ECTINGUISHING MEDIA WA	ATER					
SPECIAL FIRE FIGHTING PROCE	OURES SELF-C	ONTAINED BREATH	ING APPARATUS F	OR FIRES IN CLOSED AREAS		
EXPLOSION POTENTIAL NA	\IF					
	SEC	TION V HEALTH, FIR	ST AID AND MEDICA	L DATA		
PRIMARY ROUTE(S) OF ENTRY	ACUTE AND CHRO AND EFFECTS OF C	NIC HEALTH EFFECTS OVEREXPOSURE		FIRST AID AND MEDICAL INFORMATION		
INGESTION	ABOVE 300° EMITTED TH TORY TRACT SENSITIVE	AT NORMAL AMBI F, FUMES OR VAP AT ARE IRRITATI , EYES OR SKIN PEOPLE.	ORS MAY BE NG TO RESPIRA-	IF IRRITATION OCCURS, REMOVE AFFECTED INDIVIDUAL FROM AREA; REFER TO PHYSICIAN.		
SKIN CONTACT & ABSORPTION	AT NORMAL KNOWN.	CONDITIONS OF U	SE, NONE	· <u>-</u>		
EYE	NA					
OTHER POTENTIAL HEALTH RIOKS						

#### SECTION VI CORROSIVITY AND REACTIVITY DATA

STABILITY . UNSTABLED . STABLED

POLYMERIZATION, MAY OCCUR () WILL NOT OCCUR ()

YOOMPATIBILITY (MATERIALS TO AVOID):

NONE KNOWN

#### DECOMPOSITION PRODUCTS

WHEN FORCED TO BURN, PVC COMPOUNDS WILL MAINLY CONTRIBUTE CO, CO<sub>2</sub> & HCl AS GASES AND SMOKE.

#### CONDITIONS TO BE AVOIDED

TEMPERATURES ABOVE 300°F WILL SLOWLY DECOMPOSE THE TUBING MATERIAL RESULTING IN THE LIBERATION OF HC1 GAS.

#### SECTION VII STORAGE, HANDLING AND USE PROCEDURES

#### NORMAL STORAGE AND HANDLING

NORMAL CLEANLINESS. ISOLATION IN STORAGE FROM LARGE AMOUNTS OF EASILY COMBUSTIBLE MATERIALS, HEAT AND IGNITION SOURCES IS DESIRABLE.

NORMAL USE

NA

STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS

NA

"ASTE DISPOSAL METHOD

COMMERCIAL LANDFILL OR INCINERATION THAT COMPLYS WITH LOCAL, STATE AND FEDERAL ENVIRONMENTAL CONTROL REGULATIONS.

			ECHON	VIII PERS	DRAL PHU	TECTION	INFORMATION	
RESPIRATORY PR	IOTECTION (SPECIFY	TYPE	NONE	REQUIRED	DURING	NORMAL	HANDLING	
VENTILATION	LOCAL	NA						
	MECHANICAL (GENERAL)	NA						
	OTHER	NA						
PROTECTIVE GLO		NA						
EYE PROTECTION	4	· NA						
OTHER EQUIPME	NT	NA						
MEASURES TO B	E TAKEN DURING REP	AMD BAN	AAINTENA	NOT OF CONT	MOUNTED EC	HPMENT TH	LAT HAS BEEN IN CONTACT WITH THIS	ALATERIAL

NA

#### SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE SEE SECTION VII

OTHER PRECAUTIONS

NA

#### FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

10101

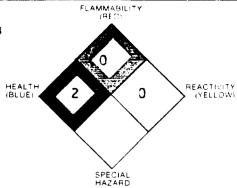
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#### TRISODIUM PHOSPHATE CRYSTALS

#### NFPA Designation 704

#### DEGREE OF HAZARD

4 = EXTREME 3 = HIGH 2 = MODERATE 1 = SLIGHT 0 = INSIGNFICANT



EMERGENCY TELEPHONES:

PLANTS:

(913) 749-8100 LAWRENCE, KS (201) 541-4171 CARTERET, NJ

CHEMTREC:

(800) 424-9300 TRANSPORTATION

MEDICAL:

(303) 595-9048 ROCKY MTN

REVISION: 3	EFFECTIVE: 06/09/87 PRINT	TED: 04/27/88
REPARED FOR USE BY	CERRO COPPER	,
	HIGHNAY 3	1 1
	ALTON & SOUTHERN RR	<b>一 25</b> 0 1 1
	SAUGET IL 62202	IPANY 0267
:======================================	IDENTIFICATION ====================================	الميتم
		űő
NFORMATION PROVIDED BY	FMC CORPORATION	លប់
	2000 MARKET STREET	F
	PHILADELPHIA PA 19103	200 200 300 300 300 300 300 300 300 300
	PRODUCT INFORMATION ====================================	
YNONYMS	TRISODIUM PHOSPHATE DODECAHYDRATE,	0.00
	TSP CRYSTALS, TSP CRYSTALLINE	
HIPPING NAME - DOT	SODIUM PHOSPHATE, TRIBASIC	OPPER
IATA	SODIUM PHOSPHATE, TRIBASIC	COP S N
IMCO		ONMI ONMI
DRMULA	NA3PD4 - 12H2O - 1/4 NADH	
HEMICAL FAMILY		西 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
		i ii i
:	PRECAUTIONARY INFORMATION ========	=========
RECAUTIONARY STATEMENT	HEALTH: AIBORNE DUST IS IRRITATING	TO NOSE AND
PLEASE USE THIS STATEMENT		
TO SATISFY THE IN-PLANT	IRRITATION.	
LABELING REQUIREMENTS	FIRST AID: FLUSH EYES WITH WATER FO	DR AT LEAST
OF THE OSHA HAZARD	15 MINUTES. WASH SKIN WITH WAT	
COMMUNICATIONS STANDARD	HANDLING: USE NIOSH/MSHA APPROVED	
29 CFR 1910.1200)	PROTECTION AND CHEMICAL GOGGLES	
Eyelk Tytoliteooy	DUST IS EXPECTED.	I. AIRBORNE
	5051 15 EXI CO.ES.	
**************	INGREDIENTS ====================================	
AS# AND COMPONENT	MATERIAL OR COMPONENT: TRISODIUM P	HOSPHATE
	CRYSTALS	
	PERCENT : 100	
	CAS# : 10101-89-0	



PAGE 02

MATERIAL SAFETY DATA

10101

89 0

#### TRISODIUM PHOSPHATE CRYSTALS

#### NFPA Designation 704

DEGREE OF HAZARD

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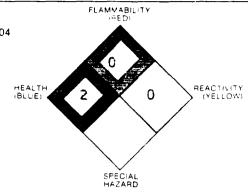
EMERGENCY TELEPHONES:

(913) 749-8100 LAWRENCE, KS PLANTS:

(201) 541-4171 CARTERET, NJ

(800) 424-9300 TRANSPORTATION CHEMTREC:

(303) 595-9048 ROCKY MTN MEDICAL:



REVISION: 3	EFFECTIVE: 06/09/87	PRINTED: 04/27/88
38363636565555555555555555	PHYSICAL DATA ========	* \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
MELTING POINT	NOT APPLICABLE NON-VOLATILE NON-VOLATILE WHITE CRYSTALS NONE BULK DENSITY 0.9 G/ML 33 @ 25C	
EVAPORATION RATE (BUTYL ACETATE = 1).: PH (AS IS)	NOT APPLICABLE	TIVITY DATA =========
FLASH POINT	NON COMBUSTIBLE NON COMBUSTIBLE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NONE STABLE WILL NOT OCCUR NONE NONE	

10101

39 0

#### TRISODIUM PHOSPHATE CRYSTALS

NFPA Designation 704

DEGREE OF HAZARD

4 = EXTREME 3 = HIGH 2 = MODERATE 1 - SLIGHT 0 = INSIGNFICANT

EMERGENCY TELEPHONES:

PLANTS:

(913) 749-8100 LAWRENCE, KS

(201) 541-4171 CARTERET, NJ (800) 424-9300 TRANSPORTATION

CHEMTREC: MEDICAL:

(303) 595-9048 ROCKY MTN

HEALTH REACTIVITY 0 SPECIAL HAZARD

FLAMMABILITY

REVISION: 3	EFFECTIVE: 06/09/87	PRINTED: 04/27/88
	ROUTES OF EXPOSURE =====	**********
EYE CONTACT:	MODERATELY IRRITATING TO	WASHED EYES (RABBIT).
SKIN CONTACT:	THESE_DAIA_ARE_EOR_IRISOD ANHYDROUS SOURCE: FMC REPORT 186-09 MINIMALLY IRRITATING AT 3 (RABBIT). THESE DATA ARE	26 DATE: 1987 00 AND 20 MG/KG
	PHOSPHATE ANHYDROUS. SOURCE: FMC REPORT 187-09 DATE: 1987	
SKIN ABSORPTION:	MG/KG (RABBIT). THESE DA PHOSPHATE ANHYDROUS. SOURCE: FMC REPORT 187-09	TA ARE FOR TRISODIUM
INHALATION:	SUGGESTED 15 MINUTE TIME- 5 MG/M3.	WEIGHTED AVERAGE =
ING ESTION	SDURCE: AIHA J. 43, NO. 1 SLIGHTLY TOXIC 20% AQUEOU LD 50 (RAT) = 6.5 G/KG. SOURCE: AIHA J. 43, NO. 1 DATE: 1979	S SOLUTION
# C = C = C = E = E = E = E = E = E = E =	EXPOSURE LIMITS ======	#25 623 5 83 6 2 8 2 3 X X X X X X X X X X X X X X X X X X
	NONE PROMULGATED	
*************	EFFECTS OF OVEREXPOSURE =	****************
ACUTE EXPOSURE	NOSE AND THROAT. INGESTITHROAT, AND GASTROINTESTI	ON MAY INJURE MOUTH, NAL TRACT. CONTACT
CHRONIC EXPOSURE:	WITH EYES PRODUCES EXTREM ALTHOUGH NO LONG TERM HUMBEEN REPORTED, THERE ARE CHRONIC EFFECTS THAT WARR BEYOND THAT REQUIRED TO A FROM AIRBORNE DUST.	IAN STUDIES HAVE NO REPORTED ANT CONTROL
		PAGE 03

10101

39 0

#### TRISODIUM PHOSPHATE CRYSTALS

#### NFPA Designation 704

DEGREE OF HAZARD

4 = EXTREME

3 = HIGH 2 - MODERATE 1 - SLIGHT 0 = INSIGNFICANT

EMERGENCY TELEPHONES:

PLANTS:

(913) 749-8100 LAWRENCE, KS

(201) 541-4171 CARTERET, NJ

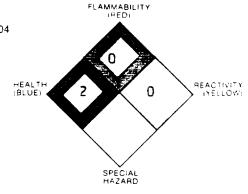
CHEMTREC:

REVISION: 3

(800) 424-9300 TRANSPORTATION

MEDICAL:

(303) 595-9648 ROCKY MTN



PRINTED: 04/27/88

EMERGENCY AND FIRST AID PROCEDURES ========= 

EFFECTIVE: 06/09/87

EYES .....

INHALATION ...

INGESTION.....

DECONTAMINATION PROCEDURE: NOTES TO PHYSICIAN....:

FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, LIFTING UPPER AND LOWER LIDS INTERMITTENTLY. SEE AN OPHTHALMOLOGIST. WASH WITH WATER. IF IRRITATION OCCURS AND

PERSISTS, CALL A PHYSICIAN.

REMOVE FROM EXPOSURE. FOR BREATHING DIFFICULTY OR DISCOMFORT, OBTAIN MEDICAL ATTENTION.

RINSE MOUTH WITH WATER, GIVE WATER TO CAUSE PARTICLES TO DISSOLVE. DO NOT CAUSE YOMITING. CALL A PHYSICIAN.

WASH WITH SOAP AND WATER.

STRONGLY ALKALINE, MAY REMOVE SEBACEOUS OILS LEAVING SKIN UNPROTECTED AND MAY CAUSE CHEMICAL BURNS. ACCESSIBLE EXPOSED TISSUES SHOULD BE FLUSHED THOROUGHLY WITH WATER, AND ANY CORNEAL BURNS WARRANT CONSULTATION OF AN

OPHTHALMOLOGIST.

DILATION THERAPHY.

INGESTION MAY RESULT IN NAUSEA, VOMITING, AND BURNS, ESPECIALLY OF THE ESOPHAGUS. TO MEUTRALIZE INGESTED MATERIAL WITH ACIDS IS NOT RECOMMENDED. THIS MAY CAUSE EXCESS HEAT AND GAS PRODUCTION WHICH CAN INCREASE THE RISK OF PERFORATION. DILUTION MAY DO LIKEWISE, BUT WHEN THE DRY MATERIAL IS INGESTED, ADHERENCE OF PARTICLES TO THE ESOPHAGEAL MUCOSA MAY ASSURE PERFORATION SO THAT IMMEDIATE DRINKING OF COLD WATER OR MILK IS ADVISED. BURNS OF THE ESOPHAGUS AND/OR STOMACH SUFFICIENT TO LEAD TO PERFORATION AND/OR STRICTURE FORMATION MAY OCCUR WITHOUT OROPHARYNGEAL BURNS. ACCORDINGLY, MOST AUTHORITIES RECOMMEND LIMITED ESOPHAGOSCOPY SUFFICIENT TO DETERMINE IF DEEP AND/OR CIRCUMFERENTIAL BURNS ARE PRESENT, BECAUSE THEY ARE MOST LIKELY TO RESULT IN ESOPHAGEAL STENOSIS. PREVENTION OF THE LATTER IS CONTROVERSIAL, THOUGH MOST AUTHORITIES FAVOR EARLY CORTICOSTEROID AND/OR PROPHYLACTIC

10101

39 0

#### TRISODIUM PHOSPHATE CRYSTALS

NFPA Designation 704

DEGREE OF HAZARD

4 - EXTREME

3 = HIGH 2 = MODERATE 1 = SLIGHT 0 = INSIGNFICANT

EMERGENCY TELEPHONES:

PLANTS:

(913) 749-8100 LAWRENCE, KS

(201) 541-4171 CARTERET, NJ

(800) 424-9300 TRANSPORTATION

CHEMTREC: MEDICAL:

(303) 595-9048 ROCKY MTN

REACTIVITY (YELLOW) 0 (BLUE) SPECIAL HAZARD

FLAMMABILITY

REVISION: 3

EFFECTIVE: 06/09/87

PRINTED: 04/27/88

USE GENERAL ROOM VENTILATION OR LOCAL EXHAUST VENTILATION REQUIREMENTS.:

VENTILATION IN PROCESSES OR HANDLING WHEN AIRBORNE DUST IS EXPECTED TO BE RELEASED

INTO THE WORK ENVIRONMENT.

RECOMMENDED PERSONAL ....:

PROTECTIVE EQUIPMENT

SPECIAL CLOTHING ..:

AND EQUIPMENT

RESPIRATORY..... | USE NIOSH/MSHA APPROVED RESPIRATORY

PROTECTION, IF AIRBORNE DUST IS

EXPECTED.

SEE BELOW.

WEAR CHEMICAL GOGGLES, IF AIRBORNE DUST

IS EXPECTED.

GLOVES..... NO SPECIAL REQUIREMENTS.

NO SPECIAL REQUIREMENTS.

(PLEASE USE THIS STATEMENT TO SATISTY THE IN-PLANT LABELING REQUIREMENTS

OF THE OSHA HAZARD COMMUNICATIONS STANDARD

29CFR 1910.1200)

USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION AND CHEMICAL GOGGLES, IF AIRBORNE DUST EXPECTED.

STORE IN DRY AREA, FOR PRODUCT QUALITY

ASSURANCE.

PROCEDURE FOR RELEASE....:

OR SPILL

WASTE DISPOSAL METHOD ....:

DISPOSAL, SPILL OR LEAK PROCEDURES =========

MATERIAL SHOULD BE SWEPT UP FOR SALVAGE

OR DISPOSAL.

IF MATERIAL CAN NOT BE SALVAGED, A METHOD OF DISPOSAL IS IN A LANDFILL IN ACCORDANCE

WITH ALL LOCAL, STATE, AND FEDERAL

REGULATIONS.



REACTIVITY

FLAMMABILITY

SPECIAL

0

MATERIAL SAFETY DATA

10101

**39** 0

TRISODIUM PHOSPHATE CRYSTALS

NFPA Designation 704

(BLUE)

DEGREE OF HAZARD

- 4 = EXTREME HIGH MODERATE

1 : SLIGHT 0 = INSIGNFICANT

EMERGENCY TELEPHONES:

PLANTS:

(913) 749-8100 LAWRENCE, KS (201) 541-4171 CARTERET, NJ

CHEMTREC:

(800) 424-9300 TRANSPORTATION

MEDICAL:

(303) 595-9048 ROCKY MIN

EFFECTIVE: 06/09/87 PRINTED: 04/27/88 REVISION: 5 DOT PROPER SHIPPING NAME .: SODIUM PHOSPHATE, TRIBASIC DOT CLASSIFICATION..... DRMHE DOT LABELS....: NOT REQUIRED NA 9148 DRM-E SODIUM PHOSPHATE, TRIBASIC DOT MARKING...... DOT PLACARD...... NOT REQUIRED NA 9148 NUMBER.... HAZARDOUS SUBSTANCE/RQ...: 5000 LBS. (2270 KG) 49 STCC NUMBER..... 4966383 EMERGENCY ACCIDENT PRECAUTIONS AND PROCEDURE: MATERIAL IS STRONGLY BASIC (ALKALINE); TAKE CARE TO AVOID CONTACT WITH PRODUCT, WHICH MAY IRRITATION, PARTICULARLY TO THE EYES. PRECAUTIONS TO BE TAKEN ...: NONE IN TRANSPORTATION CMA CHEMCARD NUMBER.... NONE TYPE PACKAGES..... NONE OTHER SHIPPING IDS..... NONE 

MATERIAL IS REPORTED IN EPA TSCA INVENTORY LIST? YES MATERIAL IS LISTED AS A CARCINOGEN/POTENTIAL CARCINOGEN IN FOLLOWING NTP ANNUAL REPORT... ? IARC MONOGRAPHS.... ? NO DSHA 29CFR PART 1910

SUBPART Z ? NO

FDA GRAS LIST; PERMITTED IN FOOD.



# WASTE RESEARCH and CRECLAMATION CO., INC.

# Material Safety Data Sheet

	<del></del>							
PRODUCT NAME(S)	1-1-1							
EMERGENCY PHONE NO.	715-834-9624		DOT SHIPPI	DOT SHIPPING 1-1-1 Trichloroethane UN2831				
DATE	Revised 10/04/88 S		STENCI	STENCILS & DERRO COPPER PRODUCTS COMPANY MSDS NUMBER - COPC-08-0270 SYNONYMS:				
FORMULA	CH <sub>3</sub> CCl <sub>3</sub>		ENVIRONDENTAL: FRIDE:					
I. HAZARDOUS INGR								
MATERIAL		TLV (PPM) %		MATERIAL		TLV (PPM) %		
CAS# 71-55-6 1-1-1 Trichloroethane		350	95 +		-			
CAS# 123-91-1 1,4 Dioxane (skin)		25	2–4					
				- ··				
			-					
II. PHYSICAL DATA								
BOILING POINT	165°			FREEZING POINT	N/A			
PECIFIC GRAVITY	1.300-1.322			VAPOR PRESSURE AT 20°C (mm)	100			
/APOR DENSITY (AIR = 1)	4.55			SOLUBILITY IN WATER % BY WT. AT 20°C	0.07			
PERCENT VOLATILES BY VOLUME	nearly 100			EVAPORATION RATE (BUTYL ACETATE =1)	over 1			
APPEARANCE	Water white.			UDUR	Sweet,	sharp odor.		
III. FIRE AND EXPLOSION HAZARD DATA								
FLASH POINT (TEST METHOD)	None			FLAMMABLE LIMITS	Upper 15			
AUTOIGNITION TEMPERATURE	Unknown			(% BY VOLUME)	Lower 7.5			
EXTINGUISHING MEDIA	Water fog.							
SPECIAL FIREFIGHTING PROCEDURES	Self contained breathing equipment should be used by firemen in buildings where l-l-l Trichloroethane is stored-keep container cool.							
UNUSUAL FIRE AND EXPLOSION HAZARDS	Vapor can be ignited by high energy ignition source. Decomposes with fire or hot surfaces to acidic gases & other highly toxic substances.							

All information recommendations and suggestions appearing in this literature concerning the use of our products are haved upon rests and data believed to be reliable however, it is the use it responsibility to determine the suitability for its own seed the products described herein. Since the actual use by others is beyond but control in organization enterested or implied, it make by Waste Research and Rectamation Collinic as to the effects of such use or the results to me observed and rectamation and Rectamation Collinic assume any insolity arising out of use by others of the products referred to herein. Not it the information herein to econstruct as absolutely complete since additions in make the receivable when particular or exceptional conditions or circumstances exist or necessary or periodic present constructions of the constructions of the constructions of the construction of the constructions of the constructions of the constructions of the constructions of the construction of the constructions of the construction of the c

, , , , , , , , , , , , , , , , , , ,	IV. HEALTH HAZARD DATA
THRESHOLD LIMIT	Medical Condition 350 ppm Carcinogen: 1,4 Dioxane Aggravated: None found.
FFECTS OF VEREXPOSURE	Eyes—Can cause severe irritation, redness, tearing, blurred vision. Skin—Severe irritation. Inhalation—Anesthetic of narcotic effect. Swallowing—Can cause nausea, vomiting, & diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.
EMERGENCY AND FIRST AID PROCEDURES	Inhalation-remove to fresh air & call physician. Give oxygen or artificia respiration if necessary. Skin contact-wash with soap and water, for irritation call physician. Eye contact-flush with water for 15 minutes, c physician. Ingestion-call physician, have list of ingredients ready.
	V. REACTIVITY DATA
STABILITY  Unstable Stable	CONDITIONS TO AVOID  Open flames, welding arcs-can cause thermo decomposition producing hydrogenechloride phosgene.
INCOMPATIBILITY (Materials To Avoid)	Water-slow hydrolysis produces corrosive acid. Avoid prolonged contact with or storage in aluminum or its alloys. Also, metallic aluminum and zinc powders should be avoided.
Hazardous Decomposition Products Hazardous Polymerization	Exposure to high temperature or open flame generates hydrogen chloride and small amounts of phosgene & chloride conditions to AVOID
May X Will Not Occur Occur	
	VI. SPILL OR LEAK PROCEDURES
TEPS TO BE TAKEN MATERIAL IS ELEASED OR ALLED	Contact proper authorities. Ventilate area. Use proper protective equipment. Small spills-mop, wipe or soak with absorbant materials. Large spills-stop leak at source, prevent spreading, pump to good drums and absorb remaining liquid. Dispose according to Government regulations.
WASTE DISPOSAL METHOD	The spent material can be recycled at Waste Research & Reclamation. Put in steel drums, seal tight and ship to Waste Research & Reclamation. For non-recyclable sludge, incinerate in a licensed chemical waste incinerator.
	VII. SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION	Conc. above TLV 350 ppm use self contained breathing apparatus.
VENTILATIONS	Recommend maintaining airborne concentrations below TLV levels. Use only wit adequate ventilation. Provide local exhaust where necessary.
PROTECTIVE GLOVES	Neopene, Viton, EYE PROTECTION, W/side OTHER PROTECTIVE Rubber suit PVC Coated Safety glasses shield EQUIPMENT & boots
	VIII. SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Handle with reasonable care. Avoid breathing vapors in concentrations over 350 ppm with a maximum peak of 500 ppm. Store in cool dry place. Prevent moist air from entering storage. No smoking.
THER	ファラギン学院 <b>は大阪</b> は日本で ファンディング Application マデー ファンディー ファンディング



CCPC-00-0272

Conoco Inc.

LUBC0415

Revised 18-Jan-92

Printed 10-Feb-92

# UNIVERSAL GEAR LUBRICANT

Manufacturer/Distributor	Conoco Inc. P.O. Box 2197 Houston, TX: 77252
Phone Numbers	General Information 1-(713)293-5550 Transport Emergency 1-(800)424-9300 Medical Emergency 1-(800)441-3637
Grade	80W-90, 85W-140
Chemical Family	Petroleum Hydrocarbons
Trade Names and Synonyms	7650, 7651 UGL
CAS Number	Mixture
NFPA Ratings	Health: 0 Flammability: 1 Reactivity: 0
NPCA-HMIS Ratings	Health: 1 Flammability: 1 Reactivity: 0 Personal Protection rating to be supplied by user depending on
	Conditions.
A HAZARD DETERMINATIO	
A HAZARD DETERMINATIO Hazardous Ingredients	
	Components of this material are not known to be hazardous as defined by OSHA's Hazard Communication Standard,
Hazardous Ingredients	Components of this material are not known to be hazardous as defined by OSHA's Hazard Communication Standard,

(continued)

HYSICAL DATA (continued)	
Vapor Density	>1 (Air = 1.0)
% Volatiles	Nil .
Evaporation Rate	Nil
Water Solubility	Insoluble
Odor	Mild petro. hydrocarbon
Form	Liquid
Color	Dark brown
Specific Gravity	0.89 (Water = 1)
AZARDOUS REACTIVITY	
Instability	Stable.
Incompatibility	Incompatible with strong oxidizing materials. Avoid heat and flame
Decomposition	Incomplete combustion may produce carbon monoxide.
Polymerization	Polymerization will not occur.
RE AND EXPLOSION DATA	
Flash Point	295°F
Method	PMCC
Autoignition	680°F
Fire and Explosion Hazards	Class IIIB Combustible Liquid (NFPA).
Extinguishing Media	Water Spray. Foam. Dry Chemical. CO2.
Special Fire Fighting Instructions	Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.
	Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

# HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin.

(continued)

LUBC0415 Page 2

#### **HEALTH HAZARD INFORMATION (continued)**

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:
Mouse skin painting studies have shown that highly
solvent-refined petroleum distillates similar to ingredients
in this product have not caused skin tumors. The product,
as with many petroleum products, may cause minor skin, eye,
or lung irritation, especially if poor hygienic practices or
inadequate engineering design allow prolonged or repeated
exposure.

Carcinogenicity	None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.
Exposure Limits UNIVERSAL GEAR LUBRICANT TLV (ACGIH) PEL (OSHA)	None Established None Established
Safety Precautions	Wash thoroughly after handling. Wash clothing after use.
ST AID	
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin Contact	The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If irritation develops, consult a physician.
Eye Contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Ingestion	If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.
Notes to Physician	Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams

#### PROTECTION INFORMATION

Generally Apr	olicable Contro	ol Measures	and Precautions
---------------	-----------------	-------------	-----------------

Ventilation: Normal shop ventilation.

Personal Protective Equ	uipment F	Respiratory F	Protection:	Non
-------------------------	-----------	---------------	-------------	-----

Respiratory Protection: None required except under unusual circumstances such as described in the Fire and

activated charcoal in 400mL water and mix thoroughly. Administer 5mL/kg, or 350mL for an average adult.

Explosion Section.

Protective Gloves: None required.

Eye Protection: None required.

Safety Precautions: Avoid prolonged skin contact by

practicing good personal hygiene and laundering contaminated

clothing.

(continued)

IFORMATION				
NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.				
Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in an approved and permitted incinerator. Do not flush to surface water or sanitary sewer system.				
Not regulated.				
Not restricted.				
Store in accordance with National Fire Protection Assn regulations.				
TIONS				
No				

# REGULATORY INFORMATION

#### OSHA HAZARD DETERMINATION

The material is not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

#### EPA DETERMINATIONS

CLEAN AIR ACT, 40 CFR 50, SECTIONS 112, 114
The material is not known to contain either a Hazardous
Air Pollutant or a Volatile Organic Chemical.

(∞ntinued)

#### REGULATORY INFORMATION (continued)

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT (CERCLA/SUPREFUND), 40 CFR 302 Not applicable: this material is covered by the CERCLA petroleum exclusion. Releases are not reportable.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III (SARA) - SECTIONS 302, 304, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR

The material is not known to contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 313 - List of Toxic Chemicals (40 CFR 372) The material is not known to contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA) (40 CFR 710) The material is a mixture as defined by TSCA. The chemical ingredients in this material are in the Section 8(b) Chemical Substance Inventory (40 CFR 710) and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies of the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If it is a hazardous waste, regulations 40 CFR 262-266 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, Section 311 The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient

: Petroleum Hydrocarbons Reportable Quantity : Film or sheen upon or discoloration of the water

surface or adjoining shoreline.

FOREIGN REGULATIONS

(continued)

#### REGULATORY INFORMATION (continued)

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)
The material is not a WHMIS Controlled Product.

#### STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")
The material is not known to contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT This material is not known to contain any ingredient(s) subject to the Act. Non-hazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Pennsylvania Worker and Community Right to Know Act.

#### ADDITIONAL INFORMATION AND REFERENCES

Product Use: Petroleum Lubricating Oil

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Responsibility for MSDS:

Safety, Health, & Env. Affairs Conoco Inc. PO Box 2197 Houston, TX 77252 713/293-5550

End of MSDS

# MATERIAL SAFETY DATA SHEET

## SAHARA OIL COMPANY OF AMERICA, INC.

3516 Greenwood Blvd. St. Louis, Mo 63143 Phone: (314) 781-4002

. . . • . '

Date: 12-3-90

#### SECTION I - IDENTITY

Product Name: Aqua Sol

Chemical Family: Petroleum Hydrocarbon

Formula: Proprietary

# SECTION II - INGREDIENTS

%

TLV(ACGIH)

Petroleum Hydrocarbon
Petroleum Sulfonate Mixture

(for misting) 5mg/M3

Note: This product contains no components listed as a carcinogen by N.T.P., I.A.R.C., or OSHA.

### SECTION III - PHYSICAL DATA

Boiling Point (F): Less than 500°F

Vapor Pressure: NA Vapor Density: 4.5

Specific Gravity (H2O = 1): .87

Melting Point (F): NA Evaporation Rate: NA

Solubility in Water: Complete (pH 8.5 approx.)
Appearance and Odor: Light amber, hydrocarbon odor

#### SECTION IV - FIRE & EXPLOSION HAZARD DATA

Flash Point (F): 265°F (COC)

Flammable Limits: NA

Extinguishing Media: Foam, CO2, dry chemical.

Special Fire Fighting Procedures: Wear self-contained breathing gear. Do not use direct stream of water as product will float. Unusual Fire & Explosion Hazards: Cool fire exposed containers with water.

PAGE 2

Product Name: Aqua Sol

#### SECTION V - REACTIVITY DATA

Stability: Stable

Incompatibility (materials to avoid): Heat, open flames, strong oxidizing materials.

Hazardous Decomposition Products: Carbon monoxide or other unidentified organic compounds may be formed.

Hazardous Polymerization: Will not occur

#### SECTION VI - HEALTH HAZARD ASSESSMENT

General Information: Not expected to be acutely toxic by ingestion. May be slightly irritating after prolonged skin contact. May cause minor eye irritation. Not expected to be toxic by inhalation. However, breathing oil mist at levels above TLV may cause respiratory irritation.

Respiratory: As above

Protective Clothing: Avoid contact with eyes. Wear safety glasses as appropriate. Wear chemical-resistant gloves and other clothing as required to minimize contact.

Ingestion: Do not induce vomiting. Seek medical advice.

Carcinogenicity:

NTP?

IARC?

OSHA?

No

No

# SECTION VII - FIRST AID PROCEDURES:

Skin: Wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned.

Eyes: Flush with large amounts of clear water. If irritation occurs, get medical attention.

Ingestion: Do not induce vomiting. Get medical attention.

Inhalation: Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

Product Name: Aqua Sol

### SECTION VIII - PROCEDURES FOR SAFE HANDLING & USE

Steps to be taken in case material is released or spilled:

Dike and contain. Remove with vacuum trucks or pump to storage vessels. Soak up residue with absorbent. Flush area with water to remove trace residue.

Waste Disposal Method: In accordance with state, local, and federal regulations.

Precautions to be taken in handling and storage: Store in cool, dry place with adequate ventilation. Keep from open flames and high temperatures.

## SECTION IX - SPECIAL PRECAUTIONS

Keep liquid and vapor away from heat, sparks, and flame.

# SECTION X - CONTROL MEASURES

Respiratory Protection: Not normally needed. If misting occurs, use NIOSH approved respirator.

Ventilation: General, mechanical ventilation.

Protective Gloves: Neoprene or nitrile

Eye Protection: Chemical splash goggles

Other Protective Clothing or Equipment: Normal work clothing

Work/Hygienic Practices: Wash after use

# . 00 0 0

#### MATERIAL SAFETY DATA SHEET COPYRIGHT GENERAL ELECTRIC CO.

15808

CTURED BY: ास्त्रया होहिएताः co. SLICONE PRODUCTS DIV LITERFORD, NY 12188

EMERGADIKA MELLEMAKEK 15(6) 127-3330 (24 FRG)

PPLIED BY: SEMERAL ELECTRIC CO. SILICONE PRODUCTS DIV MATERFORD, NY 12188

(519) 237-2330 (24 HRS)

REVISED: 03/05/90 PREPARER: DA POLSINELLI

\*\*\* I PRODUCT IDENTIFICATION \*\*\*

RODUCT IDENTIFICATION: ISSOS

-EMICHL FAMILY

SILICONE RUBBER SEALANT

THEMICAL NAME: SILICONE INDUSTRIAL SEALANT

FORMULA: MIXTURE

#### \*\*\* II PRODUCT COMPONENTS XXX

	APPROX. WGT.	ACGIH	05HA		CAS REG
RODUCT COMPOSITION	*	TLV	PEL.	UNITS	NO.
. HAZAROOUS ETHYLTRIACETOXYSILILANEANE . NON-HAZAROOUS	1-5	10(R)	10(R)	PPM	4253-3 <del>4-</del> 3*
X YD I HETHYLSILOXANE	<b>ა</b> ი⊸80	144	r <del>us</del> a	t-Main	70131-67-8 <del>%</del>
RADE SECRET COMPONENT	5-10	N#4	N/A	44.7	
R/ SECRET COMPONENT	1030	10	15	MG/M3	

#### LATION INFORMATION:

THIS SPACE RESERVED FOR SPECIAL USE.

XXX III PHYSICAL DATA X X X

OLYDIMETHYLSILOXANE

(F) ( C) DILING POINT APOR PRESSURE(20 C) MM HG

APOR DENSITY(AIR=1)

RADE SECRET COMPONENT

(F) ( C) DILING POINT :

MM HG APOR PRESSURE(20 C)

APOR DENSITY(AIR=1) .

RADE SECRET COMPONENT

( F) ( C) DILING POINT :

SPOR PRESSURE(20 C) : MM HG

JEFOR DEMOSITY(AIR=1)

\*PRODUCT INFORMATION

(F) NA (C) % VOLATILE BY VOLUME: (5 BILING POINT : NA EVAPORATION RATE :NEG. APOR PRESSURE(20 C): NA MM HG

APOR DENSITY(AIR=1): NA (BUTYL ACETATE=1)

: NA (F) NA (C) SPECIFIC GRAVITY REEZING POINT (LEATER = 1)

: NA (F) NA (C) ELTING POINT :1042.5 KG/M3 MYSICAL STATE : SOLID DENSITY ACID/ALKALINITY :UNINDUN MEG/G

: ACETIC ACID TOP: : CLEAR : ١١٨-١ CLOR

: 1.0 (PPM) DOR THRESHOLD DEUBILITY IN WATER (200): INSOLUBLE

DULBILITY IN ORGANIC SOLVENT: SLIGHTLY SOLUBLE, AROMATIC

T SOLVENT)

E. LIBIATETOXYSILANE.

DILING POINT : 240 ( F) 115.5( C)

```
FOR PRESSURE(20 C) : UNION HM HG
FOR PRESSITY(AIR=1) : 2
```

\*\*\* IV FIRE AND EDUFLOSION DATA \*\*\*

REPORTE NA (F) NA (C) BY NA IGNITION TEMP: NA (F) NA (C)

PTTYPEE LIMITS IN FIR(%): LOWER 144 LEPPER 144

I TITA TO HEDAY HEAL IMPACT PARKS IN

". FT: TO STATE DIBERARGE:

SEMBITINITY TO STATIC DISCHARMS IS NOT EXPECTED.

CHECKIERING MEDICAL

ALL STANDARD FIREFIGHTING MEDIA

SCIAL FIRSFIGHTING PROCEDURES:

NONE HOUSE.

\*\*\* V REACTIVITY DATA \*\*\*

Wastel TY:

HAZZARDOUS:

X STABLE UNSTABLE POLYMERIZATION WILL NOT OCCUR

ZARDOUS DECOMPOSITION/COMBUSTION PRODUCTS:

SILICON DIOXIDE.

ACETIC ACID.

COMPATIBILITY (MATERIALS TO AVOID):

CONTACT WITH OXIDIZING AGENTS.

APPLIES IN UNCURED STATE.

REDITIONS TO AVOID:

HONE KNOWN.

\*\*\* VI HEALTH HAZARD DATA \*\*\*

JUTE SIGNS/EFFECTS OF OVEREXPOSURE:

KESTION:

HEY BE HARMFUL IF SWALLOWED.

IN CONTACT:

UNDURED PRODUCT CONTACT WILL IRRITATE LIPS/GUMS AND TOWISE.

UNCURED PRODUCT CONTACT MAY IRRITATE THE SKIN.

HALATION:

CAUSES MILD RESPIRATORY IRRITATION.

HARMFUL IF INHALED.

APPLIES ONLY IN UNCURED STATE.

TE CONTACT:

UNCURED PRODUCT CONTACT IRRITATES EYES.

\*L CONDITIONS AGGRAVATED:

NONE KNOWN.

RESPIRATORY

HER:

ACETIC ACID RELEASED DURING CURING.

-RONIC EFFECTS OF OVEREXPOSURE:

NONE HNOWN.

ERGENCY AND FIRST AID PROCEDURES:

WGESTION:

RINSE MOUTH WITH WATER SEVERAL TIMES.

:IN

TO CLEAN FROM SKIN, REMOVE COMPLETELY WITH A DRY CLOTH OR PAPER

TOWEL, BEFORE WASHING WITH DETERGENT AND WATER.

#-MALATEON:

MOVE PERSON TO FRESH AIR.

ES:

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER

FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION.

TE TO PHYSICIAN:

NONE RNOWN.

TRICITY: POLYDIMETHYLSILDRANE

UTE OFAL LD50: UTE DERMAL LD50: MG/KG MG/KG

TUTE INHALATION LC50:

7-TETR:

ES TEST:

MMCN:44TH

XICIT:

TRADE SECRET COMPONENT

UTE DERMAL LD50:

MGZKG MGZKG

JUTE INHALATION LC50:

.UIE IM<del>HALATION L</del> THER:

FIMPONOMIN

3160 (RAT)

F EST:

TRADE SECRET COMPONENT

LITE DEAL LDSO:

MG/KG

```
1726/CERRO COPPER AND BRASS CO.
                                                     /GEIS808
FA HYDEARD WASTE:
                 14.5
38A HADARD CLASS:
      TO BE DETERMINED
MIS HEZARD CLASS:
     020 TOXIC MATERIALS
 CT CLU SSIFICATION: NA
    JAMATA ON FILLASE :
                     F30 (CCT1) 144
                      HOR (ECE! 14)
                      FOR (IATA) NA
Facilities Classification Flathewitity of Reportivity of Health 2
PETHIE B:
      3910.00.10001
ICN:
      5899G
SOITIONAL INFORMATION:
       THIS PRODUCT OR ITS COMPONENTS ARE ON THE EUROPEAN INVENTORY OF
      EXISTING COMMERCIAL CHEMICALS (EINECS).....
       THESE DATA ARE OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT
      AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EMPRESSED OR
      IMPLIED, IS MADE. THE RECOMMENDED HANDLING PROCEDURES ARE
      SELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD
      REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTENT OF THE
      INTENDED USE.....
       T = CEILING LIMIT NEGL = NEGLIGIBLE
EST= ESTIMATED NF = NONE FOUND

14 = NOT APPLICABLE UNION = UNIONAN
NE = NONE ESTABLISHED REC = RECOMMENDED
ND = NONE BETERMINED V = RECOMM. BY VENDOR
      SY-PRODUCT = REACTION BY- SKN = SKIN
PRODUCT, TSCA INMENTORY TS = TRADE
      PRODUCT, TSCA INVENTORY TS = TRADE SECRET STATUS NOT REQUIRED UNDER R = RECOMMENDED +0 CFR PART 720.30(H-2) HST = HIST
```

STEL = SHORT TERM EXPOSURE

#### MATERIAL SAFETY DATA SHEET

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0279 APPROVALS:

DATE D	F FRIN	TING:	34727790
_			

SECTION I

ENVIRONMENTAL:
SAFETY:
PURCHASING:

SCTURED CLYPTAL, INC. 305 BASTERN KYE CHELSEN FA 02150

TELEFHONE: 617-884-4918

=905UCT CLASS: RED INSULATING ENAMEL

CODE COESTIFICATION: 1201A

TRADE NAME: GLYPTAL

HM15 2 4 0

	SECTION II - HAZZ	ROOLS ING	REDIENTS		
INGREDIENT	PERCENT BY WEIGHT		BIH TLV HG/CU.H.		
XLDE	13.7	1.00		100	
CAS NUMBER 1330-20-7			•		
HEALTHEI FLAMMABILIT	Y=3 REACTIVITY=0				
∹ು <b>್</b> ದ					
AUTHO	2 ~ 2	300		300	
:as <b>number</b> 803 <b>0-30-4</b>					
ENTS HEALTHER FLANTABILIT	Y=3 REACTIVITY=0				
ALIPHATIC HYDROCARBON					
STOODARD SOLVENT	( 0.1	500			
CAS MUMBER 64741-41-9					
HIS HEALTHER FLAMMABILI	TY=3 REACTIVITY=(	<b>&gt;</b>			
HYDROCARBON HIXTURE					
IRON OXIDE	3.3				
TAS NUMBER 1309-382					
HMIS HEALTH-O FLAMMABILIT	Y=1 REACTIVITY=1				
FERRIC OXIDE					
HYDRATED MAGNESIUM SILICATE	5.8	20			
CAS NUMBER 14807-96-6					
HMIS HEALTH=2 FLAMMABILIT	Y=0 REACTIVITY=0				
"ALC					
HE IME ETHML HETCHE	25.0	200		200	
CAS NUMBER 78-93-3					
HMIS HEALTHER FLAMMABILIT	Y=3 REACTIVITY=0				
HETHAL ETHAL HETONE					
NH-BUTHNOL	2.0	50		50	
(AS NUMBER 71-36-3					
HMIS HEALTHEI FLAMMABILIT	TY=3 REACTIVITY=0				
OXYGENATED HYDROCARSON					
ACETONE	18.0	750		1000	
CAS NUMBER 67-64-1	<b></b>				
HMIS HEALTHEI FLAMMABILIT	Y=3 REACTIVITY=0				
FCETONE					
PROPINE (PROPELLANT)	15.0			1000	
CAS NUMBER 74-98-6					
HMIS HEALTH≔3 FLAHMABILIT	Y=3 REACTIVITY=0				

REMAINING 14% IS NON-HAZARDOUS ALIOTO RESIN. VM & P (CAS# 8030-30-6), AGENCY OSHA, TYPE STEL, EXPOSURE LIMIT 400 PPM N/A MEANS NOT AVAILABLE N/EST MEANS NOTESTABLISHED NOT EST MEANS NOT ESTABLISHED NOT EST MEANS NOT ESTABLISHED N/A MEANS NOT AVAILABLE NOT EST MEANS NOTESTABLISHED

SECTION III - PHYSICAL DATA BOILING RANGE: 132.1 TO 284.0 F VAPOR DENSITY: HEAVIER THAN AIR EVAPORATION RATE: FASTER THAN ETHER PERCENT VOLATILE BY VOLUME: 87.4 VOC (LESS WATER): 5.49 LBS/GAL

WEIGHT PER GALLON: 7.21 POUNDS VAPOR PRESSURE: N/A

CIMETHYLHETHANE PROPYL HYDRIDE

SOLUBILITY IN WATER: NEGLIGIBLE TARANCE AND COOR: RED LIGUID ----

MELTING POINT: N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

29444 CATTIGORY: FLORIMORLE LIQUID

FLASH POINT: (-COF

LEL: 19 UEL N/A

SYTINGUISHING MEDIA:

CARBON DICKIDE, DRY CHEMICAL OR FOAM.

U THE FIRE AND EXPLOSION HAZARDS:

RESSURE MAY EVILD UP IN CLOSED CONTAINERS THAT ARE EXPOSED TO HEAT. COLVENT VAPORS ARE HEAVIER THAN AIR AND HAY TRAVEL A CONSIDERABLE CISTANCE ALONS THE GROWN TO AN ISNITION SOURCE AND "FLASH BACK".

SHEET A FIRE FIGHTING PROCEDURES:

WATER MAY BE INEFFECTIVE, HOWEVER, WATER MAY BE USED TO COOL CLOSED CONTAINERS THAT ARE EXPOSED TO HEAT. FIREFIGHTING PERSONNEL SHOULD USER SELF-CONTAINED BREATHING APPARATUS.

#### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: SEE SECTION II

PRIMARY ROUTE(S) OF ENTRY:

INHALATION AND SKIN CONTACT

EFFECTS OF OVEREXPOSURE:

FEADACHE, NAMERA, DIZZINESS, CONFUSION, IRRITABILITY.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

RESPIRATORY DIFFICULTIES OR PREEXISTING SKIN SENSITIZATION.

CARCINOGENICITY:

NONE OF THE COMPONENTS OF THIS PRODUCT ARE REPORTED CARCINOGENS.

EMERGENCY FIRST AID PROCEDURES:

DWARLATION: REMOVE TO FRESH AIR. ADMINISTER ARTIFICIAL RESPIRATION

OR OXYGEN IF BREATHING IS DIFFICULT.

SKIN: WASH AFFECTED AREA WITH SOAP AND WATER. REMOVE AND LAUNDER

CONTAMINATED CLOTHING. CONSULT A PHYSICIAN IF IRRITATION

FERSISTS.

EYES: FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15

\* INUTES. TAKE TO A PHYSICIAN FOR MEDICAL TREATMENT.

INGESTION: CALL A PHYSICIAN IMPEDIATELY.

ACUTE: SKIN AND EVE CONTACT: PRIMARY IRRITATION

CHRONIC: XYLENE CONTAINED IN THIS MATERIAL HAS BEEN FOUND TO CAUSE THE FOLLO WING EFFECTS IN LABORATORY ANIMALS: ANEMIA, LIVER ABNORMALITIES, LIVER AND EMB DAMAGE.

EXISTING LIVER AND/OR KIDNEY DISCROERS MAY BE ASGRAVATED BY EXPOSURE TO

VE. REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPO

SEE TO MALENE WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE.

#### SECTION VI - REACTIVITY DATA

STABILITY: NORMALLY STABLE

CONDITIONS TO AVOID

NONE KNOWN

INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG ACIDS AND BASES

HAZARDOUS DECOMPOSITION PRODUCTS:

BY FIRE: NORMAL PRODUCTS OF INCOMPLETE COMBUSTION.

HAZARDOUS POLYMERIZATION: WILL NO OCCUR

CONDITIONS TO AVOID:

NONE HOUN

#### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

PROVIDE ADEQUATE VENTILATION. REMOVE ALL POSSIBLE IGNITION SOURCES. ABSORB AND DISPOSE USING NON-SPARKING TOOLS.

SLIMINATE ALL SOURCES OF IGNITION. EVACUATE UNPROTECTED PERSONNEL, WATER SPRAY MAY BE USED. TO CONTAIN RUN-OFF, COVER WITH AN ABSORBENT MATERIAL AND PLACE IN CONTAINERS FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE RESIDUE.

WASTE DISPOSAL METHOD:

DISPOSE IN ACCORDANCE WITH LOCAL APPLICABLE REGULATIONS.
DISPOSE OF USING AN APPROVED INCINERATION PROCESS OR IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING HEALTH AND POLLUTION.

#### SECTION VIII - SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION:

IN OUTDOOR OR OPEN AREAS USE BUREAU OF MINES APPROVED MECHANICAL FILTER RESPIRATOR TO REMOVE SOLID AIRBORNE PARTICULATES OF OVERSPRAY. INDOORS, WHERE VENTILATION IS INADEQUATE, USE BUREAU OF MINES APPROVED CHEMICAL-MECHANICAL RESPIRATORS DESIGNED TO REMOVE BOTH

" PARTICULATE AND VAPOR.

VENTILATION:

PROTECTIVE GLOVES:

RECOMMENDED IF SKIN CONTACT IS LIBELY.

EVE PROTECTION:

CHEMICAL SPLASH GOGGLES RECOMMENDED IF POTENTIAL FOR SPLASH OR EVE

CONTACT IS LINELY.

JE FROTECTIVE EQUIPMENT:

RECO<del>PE</del>DED AS NEEDED TO AWOID CONTACT.

SECTION IX - SPECIAL PRECAUTIONS

PRECIALITICAS TO BE TAKEN IN HAPPLING OR STORING:

STORE IN A COOL DRY PLACE AWAY FROM HEAT, SPARKS AND OPEN FLAME, KEEP CONTAINERS CLOSED AND UPRIGHT TO PREVENT LEAKAGE, OUTSIDE OR DETACHED

STORAGE IS PREFERRED. INSIDE STORAGE SHOULD BE IN A STANDARD

FLAMMABLE LIQUID STOREROOM OR CARINET, METAL CONTAINERS SHOULD BE

(ROUNDED WHEN TRANSFERRING MATERIAL FROM ONE CONTAINER TO ANOTHER. DO

NOT REUSE PRODUCT CONTAINER FOR ANY PURPOSE.

OTHER PRECAUTIONS:

PREPARED BY: TECHNICAL STAFF

REFERENCE DATE: 5/15/89

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON DATA SELIEVED TO BE CORRECT. HOWEVER, NO GUARANTEE OR WARRANTY OF ANY KIND; EXPRESSED OR IMPLIED, IS MADE WITH RESPECT TO THE INFORMATION ABOVE.

TO WHICH IT MAY CONCERN: EFFECTIVE USW 1: 1989; WE ARE REQUIRED BY SARA TITLE III SECTION 313 OF THE RIGHT TO KNOW LEGISLATION, TO INFORM YOU OF THE PERCENTAGE OF ANY INGREDIENT IN A PRODUCT WHICH IS IN THE 313 LIST OR AS AN LISTING AS A COMPONENT OF A MATERIAL WHICH IS IN A CATEGORY OF CHEMICAL LIST.

PRODUCT: 1201A GLYPTAL

18.0% ACETONE (CAS# 67-64-1)

2.0% N-BUTANOL (CAS# 71-36-3)

25.0% METHYL ETHYL KETCHE (CAS# 78-93-3)

13.7% XYLENE (CAS # 1330-20-7)

IF YOU WILL MULTIPLY YOUR TOTAL PURCHASES FORM US AS WELL AS FROM OTHER SUPPLIERS BY THE PERCENTAGE OF EACH INGREDIENT FOUND IN EACH PRODUCT AND IF THE TOTAL QUANTITY EXCEEDS THE REPORTABLE QUANTITY FOR THAT INGREDIENT YOU ARE REQUIRED TO FILE FORM R REPORTS.

# Material Safety Data Sheet EMULICONIA EM

CONOCO YMARMOS STOUDDS

ERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0287

EMUIRONMENTAL: (PRIDE)\_

Emergency Medical Telephone (800) 441-3637

#### TRANSFORMER OIL

I. MATERIAL IDENTIFICATION

Name

Transformer Oil

**Synonyms** 

Electrical Insulating Oil

Chemical Family

Petroleum Hydrocarbons

CAS Registry Number

64742-53-6

**Product Code** 

7970

Transportation Emergency Phone

1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is not hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

**Hazardous Ingredients** 

CAS Registry Number

Concentration

None

**Hazardous Physical Properties** 

None

III. PHYSICAL DATA

Appearance and Odor

Clear, water white liquid; Bland, mild petroleum odor

Boiling Point/Range

460°F

Vapor Pressure

<0.01 mm Hg @ 20°C

Vapor Density (Air = 1.0)

> 5

Specific Gravity  $(H_2O = 1)$ 

0.88

% Volatiles (by volume)

Negligible

Solubility in Water

Negligible

Evaporation Rate (n-Butyl Acetate = 1)

< 0.01

IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Materials: Fumes, smoke, carbon monoxide and sulfur oxides, in case of incomplete combustion.

Conditions to Avoid: Strong oxidants like: liquid chlorine, concentrated oxygen, sodium or calcium hypochlorite.

Hazardous Polymerization: Will not occur.

LUBP0390/April 1989

#### V. FIRE AND EXPLOSION HAZARD DATA

LFL: 1%

UFL: 7%

Flash Point (Method used): 293°F (COC)

Autoignition Temperature: >400°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO<sub>2</sub>, foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification

HAZARD RATING

Health 1 Fire 1 Reactivity 0

Least-0 Slight-1 Moderate-2 High-3 Extreme-4

#### TRANSPORTATION AND STORAGE

Storage Conditions: Store in accordance with National Fire Protection Association regulations.

Shipping Information:

DOT: Not Regulated

IATA/IMO: Not Restricted

#### VII. HEALTH HAZARD INFORMATION

Exposure Limits for Transformer Oil

PEL: None Established

Du Pont AEL: None Established

TLV: None Established

Ceiling Value: None Established

Primary Routes of Exposure/Entry: Skin.

#### Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

In accordance with the current OSHA Hazard Communication Standard criteria, this product does not require a cancer hazard warning. This is because the product is formulated from base stocks which are severely hydrotreated, severely solvent extracted, and/or processed by mild hydrotreatment and extraction. Alternatively, it may consist of components not otherwise affected by IARC criteria, such as atmospheric distillates or synthetically derived materials, and as such is not characterized by current IARC classification

Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria.

Product contacting the eyes may cause eye irritation.

Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

This product is judged to have an acute oral LD50 (rat) greater than 5 g/kg of body weight, and an acute dermal LD50 (rabbit) greater than 3.16 g/kg of body weight.

Listed as Carcinogen or Potential Carcinogen by:

Material

2

#### VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

#### IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Contain spill immediately in smallest possible area, being careful to avoid potential ignition sources. Recover as much of the product as possible by such methods as vacuuming or other mechanical means. Residual fluids should be recovered by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

#### X. PRECAUTIONARY MEASURES

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposures below the acceptable limits in Section VII. Proper respiratory selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure and published respiratory protection factors.

Ventilation: Local exhaust. General mechanical ventilation normally adequate but use local exhaust where necessary to maintain exposures below acceptable limits.

Protective Gloves: Should be worn when any potential exists for skin contact. NBR or neoprene recommended.

Eye Protection: None required.

Other Protective Equipment: Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse.

#### XI. REGULATORY INFORMATION

#### FEDERAL REGULATIONS

#### CERCLA, 40 CFR 302

The material contains the following hazardous substance which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

Hazardous Substance

Not Applicable

Reportable Quantity

# SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370) The material should be reported under the following EPA hazard categories:

	Immediate (Acute) Health Hazard		Sudden Release of Pressure
	Delayed (Chronic) Health Hazard		Reactive
_	Fire	X	Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Toxic Chemical CAS Registry Number (Upper Bound)

None

#### TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, Regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15, 40 CFR 116

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient
Petroleum Hydrocarbon

Reportable Quantity

Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

The material contains the following ingredient(s) which is considered a hazardous substance as defined by 49 CFR 171.8 if spilled while being transported in commerce.

Ingredient
Not Applicable

Reportable Quantity

#### STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")

The material contains the following ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Read and follow label directions and use care when handling or using all petroleum products.

Ingredient

None

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

This material does not contain any ingredient(s) subject to the Act. Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Act.

MSDS Code: LUBP0390
DATE OF LATEST REVISION/REVIEW:
DEPARTMENT RESPONSIBLE FOR MSDS:
PRODUCT INFORMATION CONTACT:

4/89 - Replaces MSDS dated 1/89
Environmental and Occupational Health Services
MSDS Analyst
Conoco Inc.
(713) 293-5550

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.



Material Safety Data Sheet May be used to comply with  CSMA's Hazard Communication Standard.  29 CFR 1910;1200, Standard must be  CMB No. 1218-0072    DERTITY As Used on Load and Listy   SAND, 05 RAVEL   SAND & SAVEL			Mada	OPPER PRO NUMBER -	DUCTS CC   CCAC-60   CCAC:	15° ALV -0288
29 CFR 1910.120. Standard must be consulted to speed; requirements.  OMB No. 1218-0072    Acceptance of the process of the pro	May be used to comply with			:=:		·
Section I PARTICLE CORPORATION () STREET SIZE CORPORATION () SIZE 372-3600 SIZE 372-372-3600 SIZE 372-372-372-372-372-372-372-372-372-372-	29 CFR 1910.1200. Standard must be			•		
Manufacturer's Name  MATERIAL SERVICE CORPORATION  Address (Ministry Street City, Sams, and 20° Code)  222 NORTH LA SALLE STREET  CHICAGO, ILLINOIS 60601  Seption II — Hazzardous Ingredients/Identity Information  Section II — Hazzardous Ingredients/Identity Information  MATURAL SAND OR SAND AND GRAVEL  OUST MAY CONTAIN RESPIRABLE SLICE APRICIES CAS LARGE-60-7  EXPOSURE LIMITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CIRIC METER OF ATR (mg/m²)  8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY MITH THE Y QUARTZ IN DUST.  DUST SQUARTZ: TOTAL: ACGIH 8 MSHA = 10 , OSHA 15' RESPIBABLE MSHA # OBJECT OF SUBSTANCE PER CIRIC METER OF ATR (mg/m²)  RESPIRABLE UNATZ: TOTAL: ACGIH 8 MSHA = 10 + (\$ QUARTZ + 2)  RESPIRABLE WARA # ORUM # 10 + (\$ QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m²  Section III — Physical/Chemical Characteristics  Bothing Point  4046° F  NAM Metering Point  4046° F  NECLIGIBLE  Appearance and Code  NECLIGIBLE  APPEARANCE COMPANY  NAM	,	` 				
MATERIAL SERVICE CORPORATION (1) 312-372-3600  Acorses (American Struc, CA) Same, and ZIP Code)  222 NORTH LA SALLE STREET  CHICAGO, ILLINOIS 60601.  CHICAGO, ILLINOIS 60601.  Signature of Prepared  COTHE LIMITS  ACCOMPANIES ARE EXPRESSED AS MILLIGRAMS OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  8-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE SIGNATION OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  B-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE SIGNATION OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  B-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE SIGNATION OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  B-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE SIGNATION OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  B-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE SIGNATION OF SURSTANCE PER CIRIC METER OF AIR (mg/m²).  B-HOUR ZIP QUARTZ: TOTAL: ACGIN & MSMA = 10, OSMA 15' RESPIRABLE. MSMA & NSMA = S.  DUST ∠ 12 QUARTZ: TOTAL HSMA = 30 ↑ (9 QUARTZ + 3). OSMA = 30 ↑ (1 QUARTZ + 2).  RESPIRABLE QUARTZ: ACGIN = 0.1 mg/m²  Section III — Physical/Chemical Characteristics  Section III — Physical/Chemical Characteristics  Section III — Physical/Chemical Characteristics  NA/A Meting Ports  NA/A Meting Ports  NA/A Meting Ports  NA/A NA/A NA/A NA/A NA/A NA/A NA/A NA/	Section I	_		_		
Telephone Number to Internation  222 NORTH LA SALLE STREET  CHICAGO, ILLINOIS 60601  CHICAGO, ILLINOIS 60601  CHICAGO, ILLINOIS 60601  September (opportun)  Section II — Hazzardous Ingredients/Identity Information  Hazzardous Components (Sociatio Chemical Identity, Common Nametal)  MATURAL SAND OR SAND AND GRAVEL  DUST MAY CONTAIN RESPIRABLE SILICA PARTICLES. CAS. 1480R=60=7  EXPOSURE LIMITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CIRIL METER DE AIR. (mg/m²)  8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS VARY WITH THE SIQUART? IN DUST  DUST ✓ 15 QUART?: TOTAL ASSIA = 30.7 (# pquart? + 3). DISHA = 30.2 (\$ QUART? + 2)  RESPIRABLE MANA & CONA = 10.7 (# pquart? + 3). DISHA = 30.2 (\$ QUART? + 2)  RESPIRABLE QUART?: ACGIN = 0.1 mg/m²  Section III — Physical/Chemical Characteristics  Social Per (mm Hg.)  N/A  Metering Point  4046°F  Specific Gravity (HgC = 1)  N/A  Matering Point  N/A  Everpoints Area  (Budy) Accesses = 1)  N/A  Everpoints Area  N/A  N/A  N/A  Everpoints Limits  LEL  N/A  Extrapairence and Coor  N/A  Extrapairence Medica  N/A  N/A  Extrapairence Medica  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N/	MATERIAL SERVICE COPPORATION	$\overline{\mathfrak{I}}$				
222 NORTH LA SALLE STREET  CHICAGO, ILLINOIS 6060)  CHICAGO, ILLINOIS 6060)  Signature of Preceived  6,66,89  Signature of Preceived  6,66,89  Signature of Preceived  6,66,89  Signature of Preceived  ACGIN TLV  Corner Lines  Recommended  *** (Coddon)  NATURAL SAND OR SAND AND GRAYEL  DUST MAY CORTAIN RESPIRABLE SILICA PARTICLES CAS LABOR-60-7  EXPOSURE LINITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CIRIC METER OF AIR (mg/m²)  8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LINITS YARY MITH THE 1 QUARTZ IN DUST  DUST IS QUARTZ: TOTAL SAGEH 8 MSMA = 10, OSMA 15' RESPIRABLE - MSMA 8 OSMA = 5  DUST IS QUARTZ: TOTAL MSMA = 30 : (1 QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIN = 0.1 mg/m²  Section III — Physical/Chemical Characteristics  Section III — Physical/Chemical Characteristics  Socion Pressure (mm Hq.)  N/A Mesting Point  M/A (Shupi Accesses = 1)  N/A (Shupi Accesses = 1)  N/A NA (Shupi Accesses = 1)  N/A NA		<i>V</i>				<del></del>
Section II — Provided Chemical Ingredients/Identity Information    Section II — Hazardous Components (Specific Chemical Identity Information   CSHA PEL   ACCENTILLY   Recommended   Natural Sand or Sand And Gravel				600		
Section II — Hazzerdous Ingredients/Identity Information  Hazardous Components (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY Recommended *4 (copponents (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY Recommended *4 (copponents (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY Recommended *4 (copponents (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY Recommended *4 (copponents (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY Recommended *4 (copponents (Specific Chemical Identity; Common Name(s)) CSHA PEL ACGENTLY RESPONDED IN ITEM PEL ACGENT	CHICAGO ILLINOIS COCOL		1			
Hezardous Components (Specific Chemical Identity; Common Name(a)) CSHA PEL ACGIN TLY Recommended 4, (coponic Natural Sand or Sand And Gravel  DUST MAY CONTAIN RESPIRABLE SILICA PARTICLES. CAS. LABOR=60-7  EXPOSURE LIMITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CHRIC METER OF AIR (mg/m³).  8-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY WITH THE 5 QUARTZ IN DUST.  DUST ∠ 15 QUARTZ: TOTAL ACGIN 8 MSHA = 10, OSHA 15' RESPIRABLE MSHA A OSHA = 5  DUST ≥ 15 QUARTZ: TOTAL MSHA = 30 : (% QUARTZ + 3), OSHA = 30 : (% QUARTZ + 2)  RESPIRABLE WISHA A OSHA = 10 : (% QUARTZ + 2).  RESPIRABLE QUARTZ: ACGIN = 0.1 mg/m³  Section III — Physical/Chemical Characteristics  Boiling Poirs 4046° F  Vacor Pressure (rem Hg.) N/A Meeting Poirs H/A (Busyl Accesses = 1) N/A (Busyl Accesse	CHICAGO, ILLINOIS 60001		Signature of Pres	perer (opconel)		
HEZEROUS COMPOUNDING (Specific Chemical Identity; Common Name(s)) CSHA PEL ACCENTITY Recommended 4- (coponic NATURAL SAND OR SAND AND GRAVEL  DUST MAY CONTAIN RESPIRABLE SILICA PARTICLES. CAS. 14808—60—7.  EXPOSURE LIMITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CHRIC METER OF AIR (mg/m³).  8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY MITH THE 5 QUARTZ IN DUST.  DUST  15 QUARTZ: TOTAL: ACGIH 8 MSMA = 10, OSHA 15' RESPIRABLE MSMA & CSHA = 5  DUST  15 QUARTZ: TOTAL MSMA = 30 ÷ (9 QUARTZ + 3), OSHA = 30 ÷ (5 QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Section (II — Physical/Chemical Chemical Ch	Section II — Hazzardous Ingredients/Identifi	ly Information	1			
DUST MAY CONTAIN RESPIRABLE SILICA PARTICLES CAS 14808_60_7  EXPOSURE LIMITS ARE EXPRESSED AS MILLIGRAMS OF SUBSTANCE PER CURIC METER OF AIR (mg/m³).  8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS YARY MITH THE X QUARTZ IN DUST  DUST 1 QUARTZ: TOTAL: ACGIH & MSHA = 10, OSHA 15' RESPIRABLE. MSHA & OSHA = 5  DUST 1 QUARTZ: TOTAL MSHA = 30 ± (# QUARTZ + 3). OSHA = 30 ± (X QUARTZ + 2)  RESPIRABLE. MSHA & OSHA = 10 ± (# QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Section III — Physical/Chemical Chemical Chemical States  Boiling Poirs 4046°F 2.6  Vapor Pressure (mm Hq.) N/A Mesting Poirs N/A Mesting Poirs N/A N/A Mesting Poirs N/A (Busyl Acasses = 1)  N/A Wester Acasses = 1)  N/A Wester Acasses = 1)  N/A Wester Order (Memorial December 1)  N/A	Hazardous Components (Specific Chemical Identity; Cor	mmon Name(s))	OSHA PEL	ACGIH TLY		4 (opponal)
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8-HOUR TIME MEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS VARY WITH THE \$ QUARTZ IN DUST.  DUST 1 QUARTZ: TOTAL: ACGIH & MSHA = 10, OSHA 15' RESPIRABLE. MSHA & OSHA = 5  DUST 1 DUARTZ: TOTAL MSHA = 30 7 (\$ QUARTZ + 3), OSHA = 30 - (\$ QUARTZ + 2)  RESPIRABLE. MSHA & OSHA = 10 7 (\$ QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m  Section III — Physical/Chemical Characteristics  Boiling Poirs 4046°F 2.6  Vapor Pressure (mm Hq.) N/A Meiting Poirs N/A N/A  Vapor Density (AIR = 1) N/A Everoriston Rates (Busyl Accesses = 1) N/A  Solubity in Watter  NEGLIGIBLE  Appearance and Coder  ANGULAR OR ROUND MULTICOLORED PARTICLES, QUORLESS  Section IV — Fire and Explosion Hazard Data  Plann Poirs (Method Used) Particles, Quarters  N/A		TICLES CAS	14808-60-7			
8-HOUR TIME WEIGHTED AVERAGES. RESPIRABLE DUST EXPOSURE LIMITS VARY WITH THE & QUARTZ IN DUST  DUST 1% QUARTZ: TOTAL: ACGIN & MSHA = 10, OSHA 15' RESPIRABLE - MSHA & OSHA = 5  DUST 1% QUARTZ: TOTAL MSHA = 30 ÷ (% QUARTZ + 3), OSHA = 30 ÷ (% QUARTZ + 2)  RESPIRABLE - MSHA & OSHA = 10 ÷ (% QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIN = 0.1 mg/m  Section III — Physical/Chemical Cheracteristics  Boiling Point 4046°F  Vapor Pressure (mm Hq.) H/A Meeting Point N/A  Vapor Density (AIR = 1) R/A Evaporation Rese  (Busyl Accesse = 1) N/A  Solubility in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, COORLESS  Section IV — Fire and Explosion Hazzard Detas  Pash Point (Method Used) Particles, M/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N	EXPORTING LIMITS AND EXPOSES TO ANALYSIS		*****	•	3,	
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DUST ≥ 1% QUARTZ: TOTAL MSHA = 30 → (% QUARTZ + 3). OSHA = 30 → (% QUARTZ + 2)  RESPIRABLE: MSHA & OSHA = 10 → (% QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Section III — Physical/Chemical Cheracteristics  Boiling Point 4046°F Specific Gravity (H <sub>2</sub> Q = 1)  Vapor Pressure (mm Hg.) 4046°F And Boiling Point 4040°F Specific Gravity (H <sub>2</sub> Q = 1)  Vapor Censery (AIR = 1) N/A Section Plate  N/A Evaporation Plate  (Busyl Accesses = 1) N/A  Sociality in Water  NEGLIGIBLE  Appearance and Cotor  ANGULAR OR ROUND MULTICOLORED PARTICLES. ODORLESS  Section IV — Fire and Explosion Hazzard Data  Plate Point (Method Used)  N/A N/A N/A N/A  Schopularing Media  NONE REQUIRED  Special Gravity (H <sub>2</sub> Q = 1)  N/A N/A N/A  N/A N/A  Schopularing Media  NONE REQUIRED						
DUST ≥ 1% QUARTZ: TOTAL MSHA = 30 → (% QUARTZ + 3). OSHA = 30 → (% QUARTZ + 2)  RESPIRABLE: MSHA & OSHA = 10 → (% QUARTZ + 2)  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Section: III — Physical/Chemical Cheracteristics  Boiling Point 4040°F Specific Gravity (H <sub>2</sub> Q = 1)  Vapor Pressure (mm Hg.) 4046°F ANA Melting Point H/A  Vapor Censety (AIR = 1) N/A Suppression Plate  N/A (Busyl Accesses = 1) N/A  Solubity in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES. ODORLESS  Section: N' — Fire and Explosion Hazard Data  Fish Point (Method Used)  N/A N/A N/A N/A  Extinguishing Media  NONE REQUIRED  Special Gravity (H <sub>2</sub> Q = 1)  ACGINATION MULTICOLORED PARTICLES. ODORLESS  Section: N' — Fire and Explosion Hazard Data  None Required  N/A N/A N/A N/A  Schools Fire Fighting Procedures	DUST 1% QUARTZ: TOTAL: ACGIH & MS	HA = 10, OSHA	15' RESPIRABI	F: MSHA & OSHA	z C	
RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Section III — Physical/Chemical Characteristics  Boiling Point 4046°F 2.6  Vapor Pressure (mm Hg.) 4046°F 4.7  Vapor Density (AIR = 1) 8.7  Solubity in Water NEGLIGIBLE  Appearance and Odor ANGULAR OR ROUND MULTICOLORED PARTICLES, ODORLESS  Section IV — Fire and Explosion Hazard Deta  Fash Point (Method Used) 1.7  RESPIRABLE QUARTZ: ACGIH = 0.1 mg/m³  Special Gravity (HgO = 1) 2.6  N/A 8.7  Vapor Pressure (mm Hg.) 7.6  N/A 8.7  N/A 8.7  N/A 8.7  N/A 8.7  Special Gravity (HgO = 1) 2.6  Respiration Rate (Busyl Accesses = 1) 8.7  N/A 8.7  N/A 8.7  N/A 8.7  Special Fire Fighting Procedures  Special Fire Fighting Procedures						
Section III — Physical/Chemical Characteristics  Boiling Point 4046 F Specific Gravity (HgO = 1) 2.5  Vapor Pressure (mm Hg.) H/A Melting Point N/A  Vapor Density (AIR = 1) Evaporation Rate (Busyl Acasses = 1) N/A  Solubity in Water NEGLIGIBLE  Appearance and Odor ANGULAR OR ROUND MULTICOLORED PARTICLES, DOORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used) Flammable Limits LEL N/A N/A N/A  Extinguishing Media NONE REQUIRED  Special Fire Fighting Procedures	-				•	
Boiling Point  4046 F  Vapor Pressure (mm Hg.)  N/A  Vapor Denery (AIR = 1)  N/A  Vapor Denery (AIR = 1)  N/A  Solubility in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, DOORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used)  N/A  Extinguishing Media  NONE REQUIRED  Special Fire Fighting Procedures						
Boiling Point  4046 F  Vapor Pressure (mm Hg.)  N/A  Vapor Denery (AIR = 1)  N/A  Vapor Denery (AIR = 1)  N/A  Solubility in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, DOORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used)  N/A  Extinguishing Media  NONE REQUIRED  Special Fire Fighting Procedures		<u> </u>	· · · · · · · · · · · · · · · · · · ·			
Boiling Point  4046 F  Vapor Pressure (mm Hg.)  N/A  Vapor Denery (AIR = 1)  N/A  Vapor Denery (AIR = 1)  N/A  Solubility in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, DOORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used)  N/A  Extinguishing Media  NONE REQUIRED  Special Fire Fighting Procedures						
Vapor Pressure (mm Hg.)  N/A  Vapor Censity (AIR = 1)  N/A  Vapor Censity (AIR = 1)  N/A  Evaporation Rate (Busyl Acassis = 1)  N/A  Solubility in Water NEGLIGIBLE  Appearance and Odor ANGULAR OR ROUND MULTICOLORED PARTICLES, ODORLESS  Section IV Fire and Explosion Hazzard Data  Flash Point (Method Used) N/A  Extinguishing Media NONE REQUIRED  Special Fire Fighting Procedures	Section III — Physical/Chemical Cheracteri	stics			•	
Vapor Denery (AIR = 1)    Every Constant Rate   N/A   (Butyl Accesse = 1)   N/A	Solling Point	4046°F	Specific Gravity (f	H <sub>2</sub> O = 1)		2.6
N/A (Busyl Access = 1)  Solubility in Wester NEGLIGIBLE Appearance and Odor ANGULAR OR ROUND MULTICOLORED PARTICLES, ODORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used) N/A Exingularing Media NONE REQUIRED  Special Fire Fighting Procedures	Vapor Pressure (mm Hg.)	N/A	Melting Port			N/A
Solubility in Water  NEGLIGIBLE  Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, ODORLESS  Section IV — Fire and Explosion Hazard Data  Flam Point (Method Used)  N/A  Exingularing Media  NONE REQUIRED  Special Fire Fighting Procedures	Vapor Density (AIR = 1)	N/A		11		N/A
Appearance and Odor  ANGULAR OR ROUND MULTICOLORED PARTICLES, ODORLESS  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  N/A  Exingularing Media  NONE REQUIRED  Special Fire Fighting Procedures	•					
Section IV — Fire and Explosion Hazard Data  Flain Point (Method Used) Flainmable Limits LEL UEL  N/A N/A N/A N/A  Extinguishing Media  NONE REQUIRED  Special Fire Fighting Procedures		****				<u></u>
Flash Point (Method Used)  N/A  Extinguishing Media  NONE REQUIRED  Special Fire Fighting Procedures	ANGULAR OR ROUND MULTICOLORED PARTICLE	S. ODORLESS				
N/A	Section N Fire and Explosion Hazard D	eta				
Exanguering Media NONE REQUIRED Special Fire Fighting Procedures			,		L	
Special Fire Fighting Procedures		•	N.	<u> </u>	N/A	N/A
Unusual Fire and Explosion Hazarda NONE KNOWN	·					

Section V —	Reactivity Data				
Stability	Unstable		Conditions to Avoid N/A	-	
	Stable	x	N/A		
CONTACT WIT	Halerials to Avoid) H POWERFUL OXID	ZING	AGENTS SUCH AS FLUORINE, CHLOR	INE	
	position or Byprodu DISSOLVE IN HY		JORIC ACID AND PRODUCE A CORROS	IVE GAS STITCOM TETR	AFI IMPINE
Hazardous Polymenzation	May Occur		Conditions to Avoid	THE GIS STEELOST TETR	11 EGONT DE
7 Orfinanzanos	Will Not Occur		H/A		
C 10 10	11-11-11	_ X	N/A		<del></del>
Route(s) of Entry:	Health Hazard	Data atlon?			
	Y	S	Skin? NO		Ingestion? NO
			TATE RESPIRATORY SYSTEM, EYES A		
CHRONIC EXP	OSURE TO RESPIR	ABLE (	QUARTZ IN EXCESS OF EXPOSURE LI	HITS COULD CAUSE SIL	ICOSIS
Carcinogenicity:	NIP	,	IARC Mono	varhe?	OSHA Reculated?
	NO		NO	·	NO "
			S SUFFICIENT EVIDENCE FOR CARC		
CRYSTALLINE	SILICA (A COMP	THENT	OF THIS PRODUCT) AND LIMITED E	VIDENCE FOR CARCINOS	ENICITY TO HUMANS "LIMITED
EVIDENCE" M	EANS THAT A CAU	SAL R	ELATIONSHIP IS POSSIBLE; HOMEYE	R. OTHER EXPLANATION	S SUCH AS CHANCE, BAIS.
OR CONFOUND	ING FACTORS CAN	OT A	DEQUATELY BE EXCLUDED.		•
SYMPTOMS OF			DE SHORTNESS OF RREATH, DIFFICH FION OF LUNG VOLUME AND RIGHT H		ITHOUT EXERTION. COUGHING.
Medical Condition Generally Aggrave	s ited by Exposure II	(HAL II	IG RESPIRABLE DUST MAY AGGRAVAT	E EXISTING RESPIRATO	RY SYSTEM DISEASE(s) AND/OR
		I TZUC	MY AGGRAVATE EXISTING SKIN AND	OR EYE CONDITIONS.	
Emergency and F INHALATION:	First Aid Procedures REMOVE TO FRE	IIA HZ	R. EYES: FLUSH WITH WATER, GE	MEDICAL ATTENTION	
SKIN: WASH	WITH SOAP AND	MTER		•	
Section VII -	- Precautions fo	r Sal	e Handling and Use		
	n in Case Material I		ised of Spilled Lin RF Generated MAY EXPOSE CLEA	H_IID DEDSONNEL TO DE	COTOADIC DUST WETTING OF
			ESPIRATORY EQUIPMENT MAY BE ME	•	SPIRABLE MADE TO THE OWNER OF THE OWNER OWNER OF THE OWNER OWN
JEELED HAI	TATAL MAD OR US		COLIMIAN CANTLES ME NE	ESSARV	
Waste Disposal I DI SPOSE OF		IN A	CEORDANCE WITH FEDERAL STATE A	IN LOCAL RESULATIONS	
Precautions to B	e Taken in Handling DUST MAY BE GEN	and S	oring DURING HANDLING AND STORAGE.	THE CONTROL MEASURE	S IDENTIFIED IN SECTION VIII
	SHOULD BE APPL				
Other Precaution NONE	S				
	— Control Meas				
Respiratory Protection (Specify Type) NIOSH-MSHA APPROVED DUST RESPIRATOR FOR CONDITIONS WHERE DUST LEVELS EXCEED  APPLICABLE EXPOSURE LIMITS					
Ventilation	I BELOM APPI TCARI	F FXI	REDUCE DUST CONCENTRATIONS	Special N/A	* • •
	Mechanical (General CONCENTRATIONS	USE RELO	TO REDUCE DUST	Other N/A	
Protective Glove YES, USE TO	PREVENT SKIN C		ן באש רי	olection S. SAFETY GLASSES AN	D/OR GOGGLES
Other Protective	Clothing or Equipm	ent .			
YES, WEAR LONG SLEEVE SHIRT AND LONG PANTS TO PREVENT SKIN CONTACT World hygienic Practices					
MASH EXPOSED SKIN WITH SOAP AND WATER, WASH WORK CLOTHES EREQUENTLY Pege 2 + USG-0:100-491-519/45775					

# Material Safety Data Sheet

Conoco

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-60-0287

ENVIRONMENTAL:\_\_()

Emergency Medical Telephone (800) 441-3637

EP CONOLITH GREASE 000, 00, 0, #1, #2

I. MATERIAL IDENTIFICATION

Name

EP Conolith Grease 000, 00, 0, #1, #2

**Synonyms** 

Petroleum Grease

Chemical Family

Petroleum Hydrocarbon

CAS Registry Number

Mixture; See Section XI

**Product Code** 

9447/9449/9450/9451/9453

Transportation Emergency Phone

1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is not known to be hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

III. PHYSICAL DATA

Appearance and Odor

Green-brown solid;

Mild petroleum hydrocarbon odor

Boiling Point/Range

750° - 1200°F

Vapor Pressure

Nil

Vapor Density (Air = 1.0)

>1

Specific Gravity  $(H_2O = 1)$ 

0.89

% Volatiles (by volume)

Nil

Solubility in Water

Insoluble

**Evaporation Rate** 

Nil

IV. REACTIVITY DATA

Stable: X Unstable: \_\_\_

Hazardous Decomposition Materials: Hazardous gases/vapors produced are carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat and flame.

Hazardous Polymerization: Will not occur.

GREC0120/July 1990

#### V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 300°F (PMCC)

Autoignition Temperature: 700°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO, foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification

Health 0 Fire 1 Reactivity 0

HAZARD RATING
Least-0 Slight-1 Moderate-2
High-3 Extreme-4

#### VI. TRANSPORTATION AND STORAGE

**Storage Conditions:** 

Store in accordance with National Fire Protection Association regulations.

Shipping Information:
DOT: Not Regulated

IATA/IMO: Not Restricted

#### VII. HEALTH HAZARD INFORMATION

PEL: None Established

TLV: None Established

Ceiling Value: None Established

#### Hazardous Materials Identification System (HMIS) Ratings

Health 1 Fire 1 Reactivity 0

Primary Routes of Exposure/Entry: Skin.

#### Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

The product does not pose a significant health hazard, but as with many petroleum products, poor hygienic practices or inadequate engineering design that allow prolonged or repeated exposure may cause minor skin irritation.

#### Carcinogenicity:

This material is not known to contain any chemical listed as a carcinogen or suspected carcinogen by OSHA, IARC, or NTP at a concentration greater than 0.1%.

#### VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. Wash contaminated clothing before reuse. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400mL water and mix thoroughly. Administer 5mL/kg, or 350mL, for an average adult.

#### IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Dike spill. Prevent liquid from entering sewers, waterways, or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry, or other absorbent material.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

#### X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: None required.

Eye Protection: None required.

Safety Precautions: Avoid prolonged skin contact by practicing good personal hygiene and laundering contaminated clothing.

#### XI. REGULATORY INFORMATION

#### FEDERAL REGULATIONS

CERCLA, 40 CFR 302

Not Applicable

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III SECTIONS 302, 311, 312, 313

#### SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material is not known to contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

## SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories: \_\_ Sudden Release of Pressure Immediate (Acute) Health Hazard Reactive
X Not Hazardous \_\_ Delayed (Chronic) Health Hazard

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

#### SECTION 313 - List of Toxic Chemicals (40 CFR 372)

\_ Fire

The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Approx. Concentration CAS Registry Number Ingredient (Upper Bound) Zinc Naphthenate 12001-85-3 1.0% Zinc Dithiophosphate Not Available 1.0%

#### TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 265 may apply.

# FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A,

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient Reportable Quantity

Petroleum Hydrocarbon Film or sheen upon or discoloration of the water surface or adjoining shorelines.

#### HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

#### FOREIGN REGULATION

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)

Not Determined.

#### STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")

The material is not known to contain ingredient(s) subject to the Act.

#### PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material contains the following hazardous substances:

Categories: H = Hazardous Substance (≥ 1.0%)

S = Special Hazardous Substance ( $\geq 0.01\%$ )

 $E = Environmental Hazard (<math>\geq 1.0\%$ )

IngredientCAS Registry NumberCategoryZinc Naphthenate12001-85-3EZinc DithiophosphateNot AvailableE

Nonhazardous ingredient(s) information is withheld as a trade secret in accordance with Section 11 of the Act.

MSDS Code: GREC0120

SECTIONS OF MSDS REVISED:

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

VII, VIII, XI

7/90 - Replaces MSDS dated 4/89

Safety, Occupational Health & Environmental Affairs

Hazard Communication Analyst

Conoco Inc. (713) 293-5550

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

SC-000-042 REV:5

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MATERIAL SAFETY DATA SHEET (MSDS)
SC-000-042 REV. 5 DATE 08/15/89 CODE

24-4

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION" AND TO VARIOUS STATE
"EMPLOYEE RIGHT TO KNOW" LAWS
COPYRIGHT 1989 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: DUCTILE IRON

#### ASTM ALLOY DESIGNATION

VEHDOR NAME AND ADDRESS: EUREKA FOUNDRY COMPANY P.O. BOX 6039 1601 CARTER STREET CHATTANOOGA, TN 37401 EMERGENCY PHONE NUMBER: 615/267-3328 SECTION II - HAZARDOUS COMPONENTS INGREDIENT PERCENT CAS NO. TLV PEL N/E Carbon 7440-44-0 3.0-4.3 Chromium\* 7440-47-3 0.02-0.13 Metal 0.5 mg/cu.m 1 mg/cu.m Chromium (II) compounds as Cr 0.5 mg/cu.m 0.5 mg/cu.m Chromium (III) compounds as Cr 0.5 mg/cu.m 0.5 mg/cu.m Chromium (VI) compounds as Cr Water soluble 0.05 mg/cu.m Certain water insoluble 0.05 mg/cu.m Chromic acid and chromates 0.1 mg/cu.m

N/E means none established. N/A means not applicable. N/D means no data available.

SC-000-042 REV:5

PAGE 2

	Total dust Respirable fraction	10 mg/cu.m N/E	10 mg/cu.m 5 mg/cu.m
Silicon	7440-21-3 1.8-4.0		
	nsoluble compounds as Ni pounds as Ni	1 mg/cu.m  0.1 mg/cu.m	1 mg/cu.m 0.1 mg/cu.r
Nickel*	7440-02-0 0.01-1.5		
	Dust and compounds Fume		5 mg/cu.m 1 mg/cu.m
Manganese* (as	Mn) 7439-96-5 <1.2	-	
	dust and fume as Fe		10 mg/cu.m
Iron oxida	7439-89-6 87.7-95. fume (Fe203) as Fe	1 5 mg/cu.m	
Twon	7430 00 6 00 7 65	_	

#### CARCINOGEN CLASSIFICATION

INGREDIENT	OSHA	NTP	IARC	TARGET ORGAN
Chromium Hexavalent	H	Y Y	3 1	Lung
Nickel	H	Y	1	Lung, Nasal

Y=LISTED AS HUMAN CARCINOGEN N=NOT LISTED AS HUMAN CARCINOGEN

Code for IARC evidence for human carcinogenicity: 1=positive; 2A=probable; 2B=possible; 3=not classified; 4=probably negative

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amdendments and Reauthorization Act of 1986 and 40 CFF Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years.

SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting is over 85% iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that the TLV for nuisance dust will serve as a guideline until a TLV is established.

N/E means none est

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0291
APPROVALS:

ENVIRONMENTAL:

PAGE 1

High production dry machining of ductile iron castings usually requires local exhaust ventilation.

Flame cutting, are gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that over-exposure is not likely.

Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined. The nickel content of the casting is so low that over-exposure is not likely.

Grinding on castings that have not been cleaned or that contain embedded silica will generate significant amounts of dust entaining free silica, which can cause silicosis. Good local entilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a WIOSH-approved dust respirator. IARC has listed crystalline silica as Class 2A, probably can cause lung cancer.

Other toxic metals in the alloy are present in small amounts that vill not represent a hazard if iron dust and fume are adequately controlled.

#### SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING FOINT: 2750 C for iron

/APOR PRESSURE: N/A

INPOR DENSITY: N/A

TOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

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PAGE

SECTION V - FIRE AND EXPLOSION DATA
Castings will not burn or explode.
.SECTION VI - HEALTH HAZARD DATA.
EYES: Metal particles in the eyes may cause irritation if not removed.
SKIN: None known.
<u>BREATHING:</u> Prolonged or repeated overexposure to dust or fumes from these castings may cause the following health effects.  Chromium(hexavalent chromium in fume from welding or arcing):  lung cancer Iron:
Siderosis "iron pigmentation" of the lung, which can be seen in a chest x-ray but causes little or no disability Manganese:  Central nervous system effects of sleepiness, weakness
<pre>in legs, spastic gait, emotional disturbances. Nickel:   Lung and nasal cancer.</pre>
Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.
SWALLOWING: N/A
NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.
IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.  IF ON SKIN: N/A  IF BREATHED: (Fumes from welding): Move to fresh air.  IF SWALLOWED: N/A

N/E means none established. N/A means not applicable. N/D means no data available.

I/E means none established. N/A means not applicable. N/D means no data available.

.SECTION VII - REACTIVITY DATA.

HAZARDOUS POLYMERIZATION: Will not occur STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater).

SECTION VIII - SPILL OR LEAK PROCEDURES.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

.SECTION IX - PROTECTIVE EQUIPMENT TO BE USED.

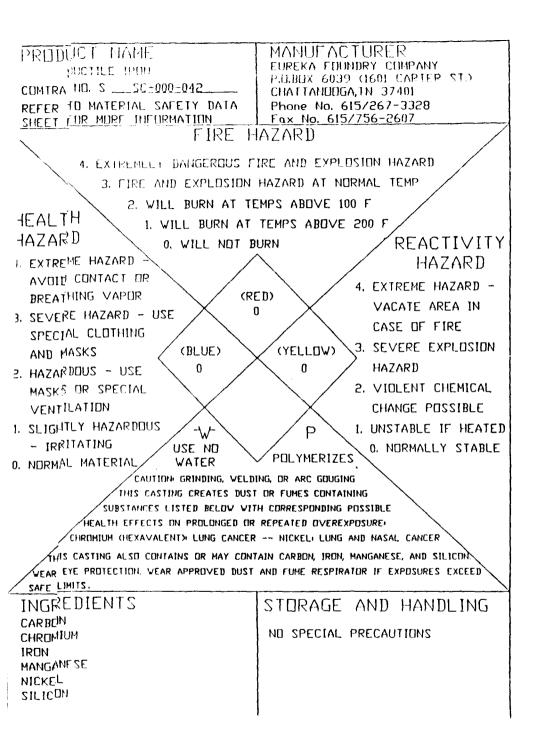
RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets If arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS.

STORAGE: Keep dry to reduce rusting.

SC-000-042 REV:5

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.



MATERIAL SAFETY DATA SHEET (MSDS) SC-000-041 REV. 3 DATE 05/11/88 CODE 24-4 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910, 1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE . "EMPLOYEE RIGHT TO KNOW" LAWS

PAGE

COPYRIGHT 1988 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: GRAY IRON CASTING

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#### ASTM ALLOY DESIGNATION

بكامية والأفراق والمراوي والمناوي والأمكاء بالماكات والمراوية والمناوية والمناوية vendor name and address: Eureka foundry company (i)

P.O. BOX 6039

1601 CARTER ST. EMERGENCY PHONE NUMBER:

CHATTANOOGA, TN 37401 615/267-3328

FIRE HAZARD CLASS: HEALTH: O FIRE: O REACTIVITY: O

THE 4TH DIAMOND:

ANSI: CAUTION! FUMES OR DUST FROM THIS CASTING MAY CAUSE PIGMENTATION OF THE LUNG. NICKEL COMPOUNDS AND HEXAVALENT INSOLUBLE CHROMIUM HAVE BEEN FOUND TO BE CARCINOGENS IN LABORATORY ANIHALS.

#### SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	2.5-4.0	N/E	N/E
Silicon	7440-21-3	1.0-3.5	10 mg/cu.m	15 mg/cu.m
Hanganese*	7439-96-5	0.2-1.1	C5 mg/cu.m as dust	C5 mg/cu.m as dust
			l mg/cu.m as fume	
Nickel*	7440-02-0	0.01-1.5	l mg/cu.m	1 mg/cu.m
Chromium*	7440-47-3	0.01-0.9	.5 mg/cu.m	1 mg/cu.m
Chromium (hexavalent)			.05 mg/cu.m	N/E
Molybdenum	7439-98-7	0.01-0.75	10 mg/cu.m	15 mg/cu.m
Sulfur	7704-34-9	0.02-0.18	N/E	N/E
Phosphorus	7723-14-0	0.01-0.8	.l mg/cu.m	.l mg/cu.m
Aluminum**	7429-90-5	0.01-0.05	10 mg/cu.m	N/E
Titanum	7440-32-6	0.01-0.06	N/E	N/E
Copper*	7440-50-8	0.01-0.90	.2 mg/cu.m	.l mg/cu.m
			as fune	as fume
			1 mg/cu.m	1 mg/cu.m
			as dust	as dust
Iron	7439-89-6	86.3-96.2	5 mg/cu.m as fume	10 mg/cu.m

H/E means none established. N/A means not applicable. N/D means no data available.

Water ininsoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Considering the small amount of chromium in the casting, overexposure to hexavalent chromium is not likely. (There is no hexavalent chromium in the alloy or its dust).

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years. Chemicals marked \*\*are reportable only if in the form of dust or fume.

#### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated; by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting is over 85% iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that over-exposure is not likely.

Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined. The nickel content of the casting is so low that over-exposure is not likely.

N/E means none established. N/A means not applicable. N/D means no data available.

CERRO CORPER PRODUCT CONTACTOR MSDS NUMBER ( CC) CC TO CO-02 CC

ENPTY PORTION TO LINE TERM 18Fk[].\_\_\_\_\_

SC-000-041 REV:3

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if iron dust and fume are adequately

#### SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: 2750 C for iron VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A 

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA.

EYES: Metal particles in the eyes may cause irritation if not removed.

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SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

PROFESSIONE FIRST AID SEEDED PROFESSION OF THE P IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

N/E means none established. N/A means not applicable. N/D means no data available.

.SECTION VII - REACTIVITY DATA. HAZARDOUS POLYMERIZATION: Will not occur STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater). .SECTION VIII - SPILL OR LEAK PROCEDURES. STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. .SECTION IX - PROTECTIVE EQUIPMENT TO BE USED. RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear .SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS.

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

PRODUCT NAME MANUFACTURER GRAY IRON EUREKA FOUNDRY COMPANY P.O. BOX 6039 Comira No S SC-000-041 1601 CARTER STREET CHATTANOOGA, TN 37401 Refer to Material Safety Data Sheet for more 615/267-3328 information. **FIRE HAZARD** 4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD 3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP 2. WILL BURN AT TEMPS ABOVE 100 F 1. WILL BURN AT TEMPS ABOVE 200 F 9. WILL NOT BURN REACTIVITY HEALTH HAZARD HAZARD 4. EXTREME HAZARD -4. EXTREME HAZARO -. n VACATE AREA IN AVOID CONTACT OR BREATHING VAPOR CASE OF FIRE 3. SEVERE EXPLOSION 3. SEVERE HAZARD - USE HAZARD SPECIAL CLOTHING AND 0 MASKS 2. VIOLENT CHEMICAL CHANGE POSSIBLE 2. HAZARDOUS - USE MASKS OR SPECIAL 1. UNSTABLE IF HEATED VENTILATION O. NORMALLY STABLE 1. SLIGHTLY HAZARDOUS - IRRITATING 0. NORMAL MATERIAL USE NO POLYMERIZES WATER CAUTION! FUMES OR DUST FROM THIS CASTING MAY CAUSE PIGMENTATION OF THE LUNG. NICKEL COMPOUNDS AND HEXAVALENT INSOLUBLE CHROMIUM HAVE BEEN FOUND TO BE CARCINOGENS IN LABORATORY ANIMALS. STORAGE AND HANDLING INGREDIENTS CARBON TITANIUM NO SPECIAL PRECAUTIONS SILICON IRON MANGANESE SULFUR PHOSPHORUS COPPER CHRONIUM METAL NICKEL ALUMINUM HOLYBDENUM

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MATERIAL SAFETY DATA SHEET (MSDS) SC-000-043 REV. 3 DATE 05/11/88 CODE 24-4 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS COPYRIGHT 1988 AMERICAN FOUNDRYMEN'S SOCIETY

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SECTION I PRODUCT IDENTIFICATION

\_\_\_\_\_ This MSDS supplied for: ABRASION RESISTANT CAST IRON

#### ASTM ALLOY DESIGNATION

VENDOR NAME AND ADDRESS: EUREKA FOUNDRY COMPANY P.O. BOX 6039 1601 CARTER STREET

CHATTANOOGA, TN 37401

EMERGENCY PHONE NUMBER: 615/,267-3328

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0

\_\_\_\_\_

THE 4TH DIAMOND:

ANSI: WARNING! FUMES OR DUST FROM THIS CASTING MAY CAUSE PIGHENTATION OF THE LUNGS. NICKEL COMPOUNDS AND HEXAVALENT INSOLUBLE CHROMIUM HAVE BEEN FOUND TO BE CARCINOGENS IN LABORATORY ANIMALS.

#### SECTION II - HAZARDOUS COMPONENTS

| INGREDIENT            | CAS NO.   | PERCENT   | TLV                   | PEL                    |
|-----------------------|-----------|-----------|-----------------------|------------------------|
| Carbon                | 7440-44-0 | 2.0-3.6   | N/E                   | N/E                    |
| Silicon               | 7440-21-3 | 0.8-1.5   | 10 mg/cu.m            | 15 mg/cul.m            |
| Hanganese*            | 7439-96-5 | 0.5-1.5   | C5 mg/cu.m<br>as dust | C5 mg/cul.m<br>as dust |
|                       |           |           | l mg/cu.m as          | fume                   |
| Nickel*               | 7440-02-0 | 0.5-7.0   | l mg/cu.m             | 1 mg/cu.m              |
| Chromium*             | 7440-47-3 | 1.1-28.0  | .5 mg/cu.m            | 1 mg/cu.m              |
| Chromium (hexavalent) |           |           | .05 mg/cu.m.          | N/E                    |
| Molybdenum            | 7439-98-7 | 0.5-3.5   | 10 mg/cu.m            | 15 mg/cu-#             |
| Sulfur                | 7704-34-9 | 0.06-0.15 | N/E                   | N/E                    |
| Phosphorus            | 7723-14-0 | 0.1-0.3   | .1 mg/cu.m            | .1 mg/cul-m            |
| Copper*               | 7440-50-8 | <1.2      | .2 mg/cu.m            | .1 mg/cu-M             |
| ••                    |           |           | as fume               | as fume                |
|                       |           |           | l mg/cu.m             | 1 mg/cu.m              |
|                       |           |           | as dust               | as dust                |
| Iron                  | 7439-89-6 | Remainder | 5 mg/cu.m             | 10 mg/cu·™             |
|                       |           |           | as fume               | as fume                |
|                       |           |           |                       |                        |

N/E means none established. N/A means not applicable. N/D means no data available.

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"C" MEANS CEILING LIMIT- these are limits which should not be exceeded, even for a short time.

Water insoluble hexavalent chromium is classified as a suspect human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH).

Certain forms of Nickel have been shown to cause cancer in laboratory animals. However, its potential to cause cancer in humans has not been determined.

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years. Chemicals marked \*\*are reportable only if in the form of dust or fume.

#### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants, primarily iron and chromium, in the air. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a quideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 28 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

N/E means none established. N/A means not applicable. N/D means no data available.

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Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form. Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Chromium may also cause nose and skin irritation. In some sensitive people, an allergic skin reaction may develop. Use good personal hygiene and ventilation to keep concentrations below the TLV.

High production machining, grinding, welding operations, etc, frequently requires local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if chromium and iron dust and fume are adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: 2750 C for iron

VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GPAVITY: 7.86 for iron

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

.SECTION VI - HEALTH HAZARD DATA.

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: Dust or fumes may cause irritation. In some sensitive

people, allergic dermatitis may develop.

N/E means none established. N/A means not applicable. N/D means no data available.

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BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to chromium fumes may cause nose irritation. Repeated inhalation, especially when combined with inadequate personal hygiene, may result in a perforated masal septum. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

NOISE: Grinding castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

THE TAX AND THE TA IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

.SECTION VII - REACTIVITY DATA.

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater). The dust may burn or explode when in contact with ammonium nitrate.

.SECTION VIII - SPILL OR LEAK PROCEDURES. 

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

.SECTION IX - PROTECTIVE EQUIPMENT TO BE USED.

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

N/E means none established. N/A means not applicable. N/D means no data available.

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IRON

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

.SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS.

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

N/E means none established. N/A means not applicable.
N/D means no data available.

#### **MANUFACTURER** PRODUCT NAME ABRASION RESISTANT CAST IRON EUREKA FOUNDRY COMPANY P.O. BOX 6039 Comira No. S \_\_\_\_\_SC-000-043\_\_ 1601 CARTER STREET CHATTANOOGA TN 37401 615/267-3328 Refer to Material Safety Data Sheet for more information. FIRE HAZARD 4. EXTREMELY DANGEHOUS FIRE AND EXPLOSION HAZARD 3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP 2. WILL BURN AT TEMPS ABOVE 100 F 1. WILL BURN AT TEMPS ABOVE 200 F 0. WILL NOT BURN REACTIVITY HEALTH HAZARD HAZARD 0 4 EXTREME HAZARO -4. EXTREME HAZARD -VACATE AREA IN AVOID CONTACT OR CASE OF FIRE **BREATHING VAPOR** 3 SEVERE EXPLOSION 3. SEVERE HAZARD - USE HAZARO 0 SPECIAL CLOTHING AND MASKS 2. VIOLENT CHEMICAL CHANGE POSSIBLE 2. HAZARDOUS - USE MASKS OR SPECIAL 1. UNSTABLE IF HEATED VENTILATION 0. NORMALLY STABLE 1. SLIGHTLY HAZARDOUS - IRRITATING ₩ D. NORMAL MATERIAL POLYMERIZES USE NO WATER WARNING! FUMES OR DUST FROM THIS CASTING MAY CAUSE PIGMENTATION OF THE LUNGS. NICKEL COMPOUNDS AND HEXAVALENT INSOLUBLE CHROMIUM HAVE BEEN FOUND TO BE CARCINOGENS IN LABORATORY ANIMALS. STORAGE AND HANDLING **INGREDIENTS** NO SPECIAL PRECAUTIONS CARBON MANGANESE SILICON NICKEL CHROMIUM METAL MOLYBDENUM COPPER **PHOS PHORUS** SULFUR

STEEL FORGINGS

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Asproved OMB No. 44.81317

# MATERIAL SAFETY DATA SHEET

| ·                                                                            |             |                | 70 2 2 2 3 1 4 4 5 5 2 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 |                                                  |               |  |
|------------------------------------------------------------------------------|-------------|----------------|----------------------------------------------------------|--------------------------------------------------|---------------|--|
|                                                                              |             | SECT           | 10N 895684818811111 88668 11111                          |                                                  |               |  |
| MANUFACTURER'S NAME                                                          |             | 3201           | EMERGENCY TELEMON                                        | £ NO.                                            |               |  |
| A. FINKL & SONS CO                                                           |             |                | (312) 975-2510                                           |                                                  |               |  |
| ADDRESS (Number, Street, City, State, and ZIP Co. 2011 N. Southport Ave. Chi | odei<br>Cas | o. II.         | 60614                                                    | • • • • • • • • • • • • • • • • • • • •          |               |  |
| Label steel                                                                  | •           |                | Steel Products                                           |                                                  |               |  |
| CHEMICAL FAMILY NA                                                           |             | <u> </u>       | NA                                                       |                                                  |               |  |
| NA.                                                                          |             |                | 1 AA                                                     |                                                  |               |  |
| SECTION                                                                      | i 11 -      | HAZAF          | RDOUS INGREDIENTS                                        |                                                  |               |  |
| PAINTS, PRESERVATIVES, & SOLVENTS                                            | x           | TLV<br>(Units) | ALLOYS AND METALLIC COATINGS                             | *                                                | TLV<br>(Unis) |  |
| XXXXXX See attached                                                          |             |                | BASE METAL                                               |                                                  |               |  |
| WAY XXX                                                                      |             |                | ALLOYS                                                   |                                                  |               |  |
| <b>ASTAGUEX</b>                                                              |             |                | METALLIC COATINGS                                        |                                                  |               |  |
| **************************************                                       |             |                | FILLER METAL PLUS COATING OR CORE FLUX                   | -                                                |               |  |
| <u> </u>                                                                     |             |                | OTHERS                                                   |                                                  |               |  |
| XXXXXX                                                                       |             |                |                                                          |                                                  |               |  |
| HAZARDOUS MIXTURE                                                            | SOF         | OTHER LIC      | DUIDS, SOLIDS, OR GASES                                  | ×                                                | TLV           |  |
|                                                                              |             |                |                                                          | 1                                                | İ             |  |
| ]                                                                            | AV          | <del></del>    | 7 1                                                      | <del>-                                    </del> | <u></u>       |  |
|                                                                              |             |                |                                                          | <del>-i</del>                                    | ·             |  |
|                                                                              |             |                |                                                          | <u> </u>                                         | 1             |  |
| <del></del>                                                                  |             |                |                                                          | <u> </u>                                         |               |  |
| SEC                                                                          | CTIO        | N III + F      | PHYSICAL DATA                                            |                                                  |               |  |
| BOILING POINT (F.)                                                           |             | NA             | SPECIFIC GRAVITY (H20-1)                                 | ļ                                                | NA.           |  |
| VAPOR PRESSURE (mm mg.)                                                      |             | NA             | PERCENT, VOLATILE<br>BY VOLUME (N)                       |                                                  | NA            |  |
| CLERIAL YTISHED ROMAN                                                        |             | NA             | ETHOLETON BATE                                           | 1                                                | N A           |  |
| SOLUBILITY IN WATER                                                          | 1           | N A            |                                                          |                                                  |               |  |
| APPEARANCE AND ODDR Solid Wit                                                |             |                | c odor                                                   |                                                  |               |  |
|                                                                              |             |                |                                                          |                                                  |               |  |
| SECTION IV -                                                                 |             | E AND          | EXPLOSION HAZARD DATA                                    |                                                  |               |  |
| NA NA                                                                        |             |                | LIN N                                                    | Δ !                                              | Uer X         |  |
| EXTINGUISHING MEDIA NA                                                       |             |                |                                                          |                                                  |               |  |
| SPECIAL FIRE FIGHTING PROCEDUPES                                             | NA          |                |                                                          |                                                  |               |  |
|                                                                              |             |                |                                                          |                                                  |               |  |
| UNUSUAL FIRE AND EXPLOSION HAZAROS                                           | NA          |                |                                                          | <del> </del>                                     |               |  |
|                                                                              |             |                |                                                          | <del></del>                                      |               |  |

|                          | SECTION V - HEALTH HAZARD DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| THRESHOLD LIMIT          | VALUE for inhalation of welding fumes - 5mg/M3 (Shr TWA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                          | exposure excessive exposure to metal fumes and vacors emitted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| when weldin              | g, humming on grinding may cause distiness or reuses .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| EMERGENCY AND TEMOVE THE | afflicted employee to fresh air and seek medical aid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| immediately              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | SECTION VI - REACTIVITY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| STABILITY                | UNSTABLE CONDITIONS TO AVOID NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | STABLE Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| INCOMPATABILITY          | , Statemais to avoid)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| HATARONIS DECO           | MPOSITION PROQUETS METAL fumes and noxious gases may be produced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| during weld              | ing, burning and grinding operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| HAZARDOUS                | MAY OCCUR CONDITIONS TO AVOID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| POLYMERIZATION           | WILL NOT OCCUR X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | SECTION VII - SPILL OR LEAK PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| STEPS TO BE TAKE         | EN IN CASE MATERIAL IS RELEASED OR SPILLED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                          | . NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| WASTE DISPOSAL           | METHOD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | NA NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | SECTION VIII - SPECIAL PROTECTION INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| AESPIAATORY PRO          | TTE ITION Specify type:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                          | ved fume respirator when welding, burning on grinding, passaution and providing, passaution with the providing of the providi |
| VENTILATION              | burning or grinding. NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                          | ito keep fumes below 5MG/M3 NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PROTECTIVE SLOV          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| STHER PROTECTIV          | VE EQUIPMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | SECTION IX - SPECIAL PRECAUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ARECAUTIONS TO           | BE TAKEN IN HANCLING AND STORING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| See America              | n National Standard Safety in Welding and Cutting 2491-1967                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| STHER PRESAUTION         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

PAGE (2)

# Section II - Hazardous Ingredients

All steel products are alloys which consist primarily of from (generally >95%). However, other elements which are either added intentionally or present as contaminants or residuals may also occur in these products at trace or low concentrations (generally <5.0%). These elements may include the following:

|                                                                    | TLV's (mg/M )                                                                                     |  |  |  |  |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--|--|--|--|
| Carbon<br>Manganese<br>Phosphorus<br>Sulfur<br>Silicon             | 55 (as CO)<br>5<br>0.1<br>13 (as SO <sub>2</sub> )                                                |  |  |  |  |
| Nickel<br>Chromium<br>Molybdenum<br>Vanadium<br>Boron              | <pre>1.0 0.05 5 (soluble compounds) 0.05 (fume) 10 (as boron oxide)</pre>                         |  |  |  |  |
| Aluminum Calcium Oxygen Nitrogen Copper Titanium Zirconium Niobium | 10 (as Al <sub>2</sub> O <sub>3</sub> ) 5 (as CaŌ) NA NA O.2 (fume) 10 (as titanium dioxide) 5    |  |  |  |  |
| Zinc<br>Tin<br>Cadmium<br>Beryllium<br>Magmesium                   | 5 (as ZnO fume) 10 (as tin oxide) 0.05 (as cadrium oxide fume) 0.002 10 (as magnesium oxide fume) |  |  |  |  |
| Tungsten<br>Cobalt                                                 | <pre>1.0 (soluble compounds) 0.05</pre>                                                           |  |  |  |  |

Some of these elements may also comprise contaminant or residual compounds present in these products. In addition, an oil surface film is often added to steel products as a rust inhibitor.

## Section VI. Health Hazard Data

Note: Steel products in the natural state do not present an inhalation, ingestion or contact hazard. However, operations such as burning, welding, sawing, brazing, and grinding may result in the possible effects shown in Health Hazard Data if exposure exceeds permissable limits as listed in Section II.

BELZOJA E METAT BASE, E.ME,

EN JECHNENTALKLI FEÍC TE PREPARED: 8,868485<u>5555</u>\_\_\_\_\_\_88 \_ - 3-87 ======================= Manufacturer ===------NAME : Belzona Molecular Metalife, Inc. () EMERGENCY PHONE NUMBER ADDRESS: 100 Charles Lindbergh Blvd. DAY: (516)-542-1000 ADDRESS: Uniondale, L.I., NY NIGHT: (516)-483-3100 ADDRESS: ZIPCODE: 11553 INFORMATION PHONE NUMBER (516) - 542 - 1000NUMBER: 1004/0866/12/2 H M I S Hazard Codes NAME : BELZONA MOLECULAR E-METAL BASE (2) Health: 2 Moderate CLASS : MODIFIED EPOXIDE RESIN Flammability: 1 Slight Reactivity: 1 Slight Personal Protective Equipment: B \_\_\_\_\_\_\_\_\_\_\_ ---- Ingredient ----I Percent I C. A. S. I LEL I Vapor Pressure lby weight | Registry No. | | | | mm Hg @ 20 C Material Description DGEBA-EPOXY RESIN NIA **25068-38-6** NIA 0.01 NIA DGEBF-EPOXY RESIN 28064-14-4 NIA Boiling Range: NIA to NIA deg F Freezing Point: NIA deg F Evaporation Rate: Slower % Volatile by Volume: 0.0 % (relative to n-butyl acetate) \_\_\_\_\_ Appearance and Odor: GREY THIXOTROPIC PASTE WITH NO ODOR. Flash point: 424. deg F Explosive Limits: LEL UEL (%V in air) (Method Used) Setaflash NIA NIA FLAMMABILITY CLASSIFICATION OSHA: Combustible Liquid - Class IIIB DOT: Not regulated EXTINGUISHING MEDIA: WATER FOG. FOAM. CARBON DIOXIDE. DRY CHEMICAL. SPECIAL FIRE FIGHTING PROCEDURES: WEAR PROTECTIVE CLOTHING. USE SELF CONTAINED BREATHING APPARATUS. FULL BUNKER GEAR SHOULD BE WORN IN EXTREME CASES. USE SAND TO CONTAIN BURNING MATERIAL. RUN OFF FROM FIRE CONTROL MAY CAUSE POLLUTION. DECONTAMINATE CLOTHING AFTER USE. UNUSUAL FIRE AND EXPLOSION HAZARDS:

DECOMPOSITION AND COMBUSTION PRODUCTS MAY BE HAZARDOUS.

```
PROTECTIVE GLOVES:
                     PROVIDE ADEQUATE CROSS AIR CIRCULATION.
                                      VENTILATION:
   USE NIOSH APPROVED RESPIRATOR SUITABLE FOR ORGANIC VAPORS IF NECESSARY
                                RESPIRATORY PROTECTION:
SOLIDIFY AND DISPOSE OF PROPERLY.
      LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
                                WASTE DISPOSAL METHODS:
                       TRANSFER TO CLOSED METAL CONTAINER.
                             KEEP OUT OF WATER SUPPLY.
         USE SAND TO ABSORE SPILLED MATERIAL AND DISPOSE OF PROPERLY.
                          REMOVE ALL SOURCES OF IGNITION.
                             STEPS FOR MATERIAL SPILLAGE:
HADID STRONG ACIDS OR BASES IN BULK.
                         POLYMERIZATION CONDITIONS TO AVOID:
                      HAZARDOUS POLYMERIZATION: Will not occur
                                     ULDEHYDES.
                                 OXIDER OF CARBON.
                          HAZARDOUS DECOMPOSITION PRODUCTS:
                      AVOID EPOXY RESIN AND AMINE MIXTURES.
                      AVOID STRONG OXIDIZING AGENTS, AMINES.
                INCOMPRIBILITY (MATERIALS TO AVOID CONTACT WITH):
                                       STABLE
                            STABILITY CONDITIONS TO AVOID:
                                   SIGETLITY: Stable
 CALL A PHYSICIAN OR TAKE TO A HOSPITAL IMMEDIATELY.
                           REMOVE CONTAMINATED CLOTHING.
                          IE SMALLOWED, INDUCE VOMITING.
                          MUSH SKIN MITH SORP AND WATER.
                      FLUSH EYES WITH WATER FOR 15 MINUTES.
       MOVE TO FRESH AIR AND GIVE ARTIFICIAL RESPIRATION IF NECESSARY.
                         EMERGENCY AND FIRST AID PROCEDURES:
                  PRIME ROUTE OF ENTRY THROUGH SKIN ABSORPTION.
                      EXTREMELY IRRITATING TO SKIN AND EYES.
                                     SENSILIZERI
                                       DANGERI
      THRESHOLD LIMIT VALUES: See Section V
                               EFFECTS OF OVEREXPOSURE:
HIN
         HIN
              HIN
                 UIN
                     HIN
                         HIN
                                   DCERL-EDOXA KERIN
     HIN
         AIN
              HIN
                 AIN
                     RIN
                         HIN
                                   DCEBU-EDOXA KERIN
   IDEBWUF I INHUF
            Material Description
   (ten) | (thn) | (ten) | (tent) VJT |
                        пан г
                               ---- quarpaubur -----
 (mqq) 0501 |
       | FD20(W3/k3)
                 I DZHU I UCEIH
```

SHEETY GOGGLES.

SANTHETIC GLOVES.

EVE PROTECTION:

OTHER PROTECTIVE EQUIPMENT: EYEWASH STATION. EMERGENCY SHOWER. IMPERMEABLE APRON OR GARMENT TO MINIMIZE THIN CONTACT. CHEMICALS ARE NOT LISTED AS CARCINOGENS BY OSHA, NTP, ACGIH, OR IARC. HANDLING AND STORAGE PRECAUTIONS: OVERHEATING MAY CAUSE CONTAINER TO RUPTURE. MUST BE KEPT IN DRY, COOL AND COVERED AREA. AVOID BREATHING VAPORS. EMPTY CONTAINERS RETAIN RESIDUE AND MAY BE DANGEROUS. DISCARD CONTAMINATED SHOES. OTHER PRECAUTIONS: CHECK ALL CONTAINERS FOR LEAKS. AVOID PROLONGED BREATHING OR CONTACT WITH SKIN. EVERY EFFORT HAS BEEN MADE TO ENSURE THAT THE SAFETY INFORMATION IN THIS SHEET IS ACCURATE, SINCE BELZONA MOLECULAR METALIFE, INC. HAS NO CONTROL OVER THE CONDITIONS UNDER WHICH THE PRODUCT WILL BE USED, LIABILITY WILL NOT BE ASSUMED TO EXCEED

REPLACEMENT OR REFUND OF THE PURCHASE PRICE OF THIS PRODUCT, EXCEPT AS STATED HEREIN, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BELZONA MOLECULAR METALIFE. INC. ASSUMES NO LIABILITY FOR INJURY OR INCIDENTAL OR CONSEQUENTIAL DAMAGE ARISING OUT OF THE STORAGE, HANDLING OR USE OF THIS PRODUCT.

LETTER DESIGNATION OF PERSONAL PROTECTIVE EPUIPMENT

A - SAFETY GLASSES.

B - SAFETY GLASSES, GLOVES.

C - SG, G, SYNTHETIC APRON. D - FACE SHIELD, G, SA. E - SG, G, DUST RESPIRATOR. F - SG, G, SA, DR. G - SG, G, VAPOR RESPIRATOR. H - VAPOR RESPIRATOR.

I - SG, G, COMBINATION D & VR. J - COMB. D & VR.

K - AIRLINE HOOD, G, FULL PROTECTIVE SUIT, BOOTS.

X - SPECIAL HANDLING PROCEDURE.

Authorized Signature: Mulul Cut

Date: 10/1/17

Title: U.1. TELH. SCHULCE



# MATERIAL SAFETY DATA SHEET

# SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER:

PRODUCT ID NO .:

Molub-Alloy 170W Gear Oil ISO 680

See SECTION 9

CHEMICAL NAME:

Petroleum hydrocarbons plus performance additives.

SYNONYMS: CHEMICAL FORMULA: Not Applicable. Product is a mixture. Not Applicable. No single formula.

CHEMICAL FAMILY:

Petroleum hydrocarbons plus performance additives.

PRODUCT USE:

PRODUCT CAS NO.:

Not Applicable. No single CAS number.

NFPA CLASSIFICATION:

**HEALTH: 1** FIRE: 1 REACTIVITY: 0

SPECIAL HAZARDS: None known.

MANUFACTURER:

Tribol

4801 W. 147th St.

Hawthome, CA 90250-6795

U.S.A.

Emergency Phone: (213) 679-0271

SUPPLIER (CANADA):

Tribol Inc.

409 King Street West, Suite 404

Toronto, Ontario Canada M5V 1K1

Emergency Phone: (213) 679-0271

TRANSPORTATION EMERGENCY:

In U.S.A.: CHEMTREC -

(800) 424-9300

In District of Columbia -

(202) 483-7616

In Canada: CANUTEC -

(613) 966-6666 (Call Collect)

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# **SECTION 2 - HAZARDOUS INGREDIENTS**

|                                       | %     | CAS NO     | LD <sub>50</sub>               | LC <sub>50</sub> | Exposure<br>Limits (TWA*)                             |
|---------------------------------------|-------|------------|--------------------------------|------------------|-------------------------------------------------------|
| Solvent-dewaxed petroleum raffinates. | 84-94 | 64742-62-7 | >5g/kg<br>Acute oral<br>(Rats) | Not found        | 5mg/m³<br>for mist<br>(OSHA & ACGIH)                  |
| Sulfurized vegetable oil              | 3-7   | 68990-64-7 | Not found                      | Not found        | 5mg/m <sup>3</sup> for mist (Tribol's recommendation) |

<sup>\*</sup>TWA = 8-hour time-weighted average.

Note: Exposure limits may vary between jurisdictions. Employers are advised to contact regulatory agencies for the limits in effect in their areas.

# **SECTION 3 - PHYSICAL DATA**

PHYSICAL STATE:

Liquid.

**APPEARANCE AND ODOR:** 

Dark grey liquid. Slight characteristic odor.

ODOR THRESHOLD (ppm):

Not determined.

VAPOR PRESSURE (mm Hg):

Not determined.

VAPOR DENSITY (Air=1):

Not determined for this product.

For base oil: >1

EVAPORATION RATE

Not determined for this product.

(n-Butyl acetate = 1):

For base oil: <1

BOILING POINT (C/F):

Not determined.

POUR POINT (C/F):

+10/-12

FREEZING POINT("C/"F):

Not determined.

pH:

Not applicable.

**SPECIFIC GRAVITY:** 

0.92 (typical)



PERCENT VOLATILE (By weight):

Negligible.

**SOLUBILITY IN WATER:** 

Negligible (less than 0.1%).

| SECTION 4 - FIRE AND EXPLOS                      | SION HAZARD DATA                                                                                                                                                                       |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLAMMABILITY:                                    | This product is not classified as flammable or combustible; however, it will burn if its temperature reaches or exceeds its flash point.                                               |
| EXTINGUISHING MEDIA:                             | Dry Chemical, water-fog, chemical foam, or CO <sub>2</sub> . Direct water-stream may cause frothing.                                                                                   |
| SPECIAL FIREFIGHTING PROCEDURE:                  | Use water to cool fire-exposed containers. Wear full emergency equipment with supplied-air respirator (SA), or self-contained breathing apparatus (SCBA).                              |
| UNUSUAL FIRE & EXPLOSION HAZARDS:                | None known.                                                                                                                                                                            |
| FLASH POINT (*C/*F) AND METHOD:                  | 254/490, ASTM D 92 (C.O.C.)                                                                                                                                                            |
| FIRE POINT (*C*/F) AND METHOD:                   | Not determined.                                                                                                                                                                        |
| FLAMMABLE LIMITS (% by volume):                  | Upper: Not determined. Lower: Not determined.                                                                                                                                          |
| AUTOIGNITION TEMPERATURE (*C/*F):                | Not determined.                                                                                                                                                                        |
| HAZARDOUS COMBUSTION PRODUCTS:                   | Smoke and toxic gases including aldehydes, short-chain alkyl mercaptans, hydrogen sulfide (H <sub>2</sub> S), and oxides of molybdenum, zinc, phosphorus, carbon, sulfur, and nitrogen |
| EXPLOSION SENSITIVITY: impact: Static Discharge: | Sensitive X Not Sensitive Sensitive X Not Sensitive                                                                                                                                    |
| EMPTY/PARTIAL CONTAINER WARNING:                 | As with most petroleum products, empty or partial containers may contain explosive vapors. Do not expose to direct flame or high temperature.                                          |
| SECTION 5 - REACTIVITY DATA                      | ·                                                                                                                                                                                      |
| CHEMICAL STABILITY: Conditions to Avoid:         | X Stable Unstable Prolonged exposure to elevated temperature.                                                                                                                          |

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| INCOMPATIBILITY: Materials to Avoid:              |                                                                                                                                                                                                                                                                                              | X Yes No Strong oxidizers, acids, and alkalies.                                                                                                                                                                                                                             |                  |          |                                 |  |  |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|---------------------------------|--|--|
| HAZARDOUS POLYMERIZATION:<br>Conditions to Avoid: |                                                                                                                                                                                                                                                                                              | Will Oct<br>None.                                                                                                                                                                                                                                                           | cur _            | <u>X</u> | Will Not Occur                  |  |  |
| HAZARDOUS DECOMPOSITION PRODUCTS:                 |                                                                                                                                                                                                                                                                                              | Smoke and toxic gases including aldehydes, short-chain alkyl mercaptans, hydrogen sulfide (H <sub>2</sub> S), and oxides of molybdenum, zinc, phosphorus, carbon, sulfur, and nitrogen,                                                                                     |                  |          |                                 |  |  |
| SECTION 6 - TOXICO                                | DLOGICAL PI                                                                                                                                                                                                                                                                                  | ROPERTI                                                                                                                                                                                                                                                                     | ES 8             | —<br>k Н | EALTH HAZARD DATA               |  |  |
| ROUTES OF ENTRY:                                  | X Skin Cont                                                                                                                                                                                                                                                                                  | actSkin<br>act _X_Inha                                                                                                                                                                                                                                                      | Absor<br>alation | ptio     | n                               |  |  |
| SYMPTOMS AND EFFECTS                              | OF ACUTE EXPOS                                                                                                                                                                                                                                                                               | URE:                                                                                                                                                                                                                                                                        |                  |          |                                 |  |  |
| Skin:                                             | May cause skin                                                                                                                                                                                                                                                                               | May cause skin irritation.                                                                                                                                                                                                                                                  |                  |          |                                 |  |  |
| Eyes:                                             | Product, vapor                                                                                                                                                                                                                                                                               | Product, vapors, and mist may cause eye irritation and burning.                                                                                                                                                                                                             |                  |          |                                 |  |  |
| Inhalation:                                       | Intense and/or TLV/PEL may o                                                                                                                                                                                                                                                                 | Vapors may irritate the mucosal membranes of mouth, nose, and throat. Intense and/or prolonged exposure to vapor concentrations exceeding the TLV/PEL may cause headache, nausea, and vomiting. Oil vapors may accumulate in the lungs, and may cause chemical pneumonitis. |                  |          |                                 |  |  |
| Ingestion:                                        | significant disc                                                                                                                                                                                                                                                                             | Ingestion via minor contamination of fingers or food is not likely to cause significant discomfort or adverse effect. However, aspiration (with vomitus) into the lungs may cause mild to severe pulmonary injury, and may be fatal.                                        |                  |          |                                 |  |  |
| SYMPTOMS AND EFFECTS                              | OF CHRONIC EXP                                                                                                                                                                                                                                                                               | OSURE:                                                                                                                                                                                                                                                                      |                  |          |                                 |  |  |
| Skin:                                             | Prolonged or repeated contact tends to remove natural skin oil, and may cause irritation, rash, and possibly dermatitis.                                                                                                                                                                     |                                                                                                                                                                                                                                                                             |                  |          |                                 |  |  |
| Eyes:                                             | Product, vapors, and mist may cause eye irritation and burning.                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                             |                  |          |                                 |  |  |
| inhalation:                                       | Chronic inhalation may produce the same symptoms and effects discussed under inhalation - ACUTE EXPOSURE, above.                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |                  |          |                                 |  |  |
| ingestion:                                        | In the normal course of industrial use, ingestion of large quantities of this product is unlikely. Nevertheless, ingestion may irritate the gastro-intestinal tract and may cause nausea and vomiting. Aspiration (with vomitus) into the lungs may cause pulmonary injury and may be fatal. |                                                                                                                                                                                                                                                                             |                  |          |                                 |  |  |
| MEDICAL CONDITIONS AGG                            | RAVATED BY EXP                                                                                                                                                                                                                                                                               | OSURE:                                                                                                                                                                                                                                                                      | Existin          | ng c     | hronic dermal, respiratory, and |  |  |

possibly gastrointestinal diseases.

Not determined for this product. See Section 2 - HAZARDOUS INGREDIENTS, in this MSDS, for ingredient(s) limits. **EXPOSURE LIMITS:** 

IRRITANCY: Possible irritancy of skin, eyes, mucosal membranes, and respiratory tract. ì



SENSITIZATION:

None known.

CARCINOGENICITY:

NTP Listed: Yes X No IARC Listed: Yes X No

OSHA Listed: Yes X No

TERATOGENICITY AND EMBRYOTOXICITY: This product is not known to contain, at 0.1% or higher, any

ingredients known to cause teratogenic or embryonic toxicity.

REPRODUCTIVE TOXICITY:

This product is not known to contain, at 0.1% or higher, any ingredients

known to cuase reproductive toxicity.

**MUTAGENICITY:** 

This product is not known to contain, at 0.1% or higher, any ingredients

known to cause mutation in the living cell.

**SYNERGISTIC PRODUCTS:** 

None known.

# SECTION 7 - PREVENTIVE MEASURES AND PERSONAL PROTECTION

It is unlikely that serious overexposure to this product will occur during normal industrial use. Nevertheless, the user must exercise adequate precautions to protect against accidental spills, and to avoid undue exposure to sprays, mists, or vapors that may be inadvertently generated, especially at elevated temperatures. The following protective measures are recommended whenever undue exposure is unavoidable.

**GLOVES:** 

Oil-impervious and solvent-resistant (e.g. neoprene) type.

RESPIRATOR:

OSHA/NIOSH-approved supplied-air respirator (SA), or self-contained

breathing apparatus (SCBA).

**EYE PROTECTION:** 

Chemical goggles or, preferably, full face-shield. Do not wear contact lenses

in the work area.

FOOTWEAR:

Oil-impervious (e.g. neoprene) cover and anti-slip sole construction.

**CLOTHING:** 

Oil-impervious (e.g., neoprene) apron or, preferably, coveralls.

OTHER PROTECTION:

As deemed necessary.

PERSONAL HYGIENE: Wash hands before eating or smoking. Do not smoke in the work area. Promptly remove contaminated clothing. Immediately clean up any spills, to prevent accidental slipping.

ENGINEERING CONTROLS: General ventilation, normally adequate, should be augmented with local exhaust whenever the TLV/PEL is exceeded, or worker discomfort is reported or observed.

LEAK AND SPILL PROCEDURE: Wear adequate protection and eliminate all sources of ignition. Stop the leak, if it can be safely done. Ventilate the area and dike the spill to prevent entry into sewer or watercourses. Suction or scoop the spill into appropriate disposal or recycling vessels, then cover the spill area with oil-absorbent. Label all waste containers appropriately, including all applicable hazard symbols. If spill enters U.S. navigable waters, the contiguous zone, or adjoining shorelines, notify the Coast Guard National Response Center (Tel. No. 800-424-8802).

- WASTE DISPOSAL: Dispose of waste in accordance with applicable Federal, State (or Province), and local laws and regulations. (The services of licensed hazardous waste-disposal facilities may be utilized.) It is the user's responsibility to comply with the U.S. Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act. Refer to Section 10 REGULATORY INFORMATION, in this MSDS.
- HANDLING PROCEDURES & EQUIPMENT: Exercise prudent precautions to avoid accidental spillage, food contamination, vapor or mist inhalation, eye or skin contact, and ignition of this product.
- STORAGE REQUIREMENTS: Store in a clean, dry area below 49°C/120°F, away from all ignition sources and incompatible materials listed in SECTION 5 REACTIVITY DATA, in this MSDS.

SPECIAL SHIPPING INFORMATION: See Sections 9 & 10, in this MSDS.

# SECTION 8 - FIRST AID AND EMERGENCY MEASURES

SKIN: Wipe off, then wash thoroughly with soap and water.

EYES: Flush immediately with water for at least 15 minutes, occasionally lifting the eyelid. Get prompt medical attention.

INHALATION: Immediately remove the individual to fresh air. If breathing is difficult, administer oxygen. If breathing stops, administer artificial respiration. Keep the individual warm and quiet, and get prompt medical attention.

INGESTION: If the individual is conscious, give 1-2 glasses of milk or water to dilute stomach content. Do not physically induce vomiting. Never give anything by mouth to an unconscious person. As with all accidental chemical ingestions, use all available precautions to prevent aspiration of vomitus into the lungs, which may be fatal. Position the patient's head so as to facilitate expulsion of vomitus. Get prompt medical attention.

NOTE TO PHYSICIAN: Intubate the stomach. Aspirate the pharynx as regularly as possible to remove gagged or vomited stomach content.

## SECTION 9 - TRANSPORTATION INFORMATION

PRODUCT IDENTIFICATION: Not applicable.

DOT PROPER SHIPPING NAME: Not applicable.

DOT HAZARD CLASS: Not applicable.

DOT LABEL REQUIRED: None.

IMO CLASS: Not applicable.

CANADIAN (WHMIS) CLASSIFICATION: Class: D Division: 2 Subdivision: B

CANADIAN (TDG ACT) CLASSIFICATION: Primary: Not applicable Subsidiary: Not applicable

PACKAGING (PACKING) GROUP: Not applicable.



FREIGHT CLASSIFICATION:

Petroleum Lubricating Oil.

# SECTION 10 - REGULATORY INFORMATION

TOXIC SUBSTANCE CONTROL ACT (TSCA): To our best knowledge, all the ingredients in this product have been included, by their manufactures/suppliers, on the TSCA Inventory.

#### SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA)

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES: This product contains the following ingredient(s) on this list: None.

SECTION 313 - TOXIC CHEMICALS: This product contains the following ingredient(s) at or above the de minimis concentrations: None.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA):

Reporting of releases of this product is X required not required.

CERCLA statutory RQ = 250 lbs. (32 gallons), due to zinc compound content.

RESOURCE, CONSERVATION, AND RECOVERY ACT (RCRA): This product contains the following ingredient(s) on the Hazardous Wastes List: None.

CALIFORNIA HAZARDOUS SUBSTANCES LIST: This product contains the following ingredients at or above the de minimis concentrations: Oil at 94% (max.).

CALIFORNIA PROPOSITION 65: This product contains the following ingredient(s) listed in the Safe Drinking Water and Toxic Enforcement Act of 1986: None.

MICHIGAN CRITICAL MATERIALS: This product contains the following ingredient(s) at or above the de minimis concentrations: None.

CANADA'S WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS): This product contains the following substance(s) at or above the de minimis concentrations: None.

# SECTION 11 - PREPARATION OF THE MSDS

PREPARED BY:

Nabil N. Saaty, Toxicologist

**TELEPHONE NO.:** 

(213) 679-0271

SUPERSEDES:

July 27, 1990

June 22, 1990

The information presented herein has been compiled from sources considered to be dependable, and is, to the best knowledge of Tribol, accurate at the time of this writing. The data in this MSDS relates only to the product(s) designated herein. Tribol makes no warranty whatsoever, expressed or implied, regarding the accuracy of this data or the results to be obtained from the use thereof. Tribol assumes no responsibility for injury to buyer or to third persons, or for any damage to property. Buyer assumes all risks.

MSDS 170W July 27, 1990

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# MATERIAL SAFETY DATA SHEET

CERRO COPPER MYODUCTS CCMFAM.
MSDS NUMBER - CCPC-00-0279

# SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER:

PRODUCT ID NO.:

Molub-Alloy 860/150-0 Grease Molub-Alloy 860/150-1 Grease Molub-Alloy 860/150-2 Grease

See SECTION 9 See SECTION 9 See SECTION 9

CHEMICAL NAME:

Petroleum hydrocarbons plus performance additives.

SYNONYMS: CHEMICAL FORMULA: Not Applicable. Product is a mixture. Not Applicable. No single formula.

CHEMICAL FAMILY: PRODUCT USE:

Petroleum hydrocarbons plus performance additives.

Lubricant.

PRODUCT CAS NO .:

Not Applicable. No single CAS number.

NFPA CLASSIFICATION:

FIRE: 1 REACTIVITY: 0 HEALTH: 1

SPECIAL HAZARDS: None known.

MANUFACTURER:

Tribol

4801 W. 147th St.

Hawthome, CA 90250-6795

U.S.A.

Emergency Phone: (213) 679-0271

SUPPLIER (CANADA):

Tribol Inc.

409 King Street West, Suite 404

Toronto, Ontario Canada M5V 1K1

Emergency Phone: (213) 679-0271

TRANSPORTATION EMERGENCY:

In U.S.A.: CHEMTREC -

(800) 424-9300 (202) 483-7616

In District of Columbia -

In Canada: CANUTEC -

(613) 966-6666 (Call Collect)

MSDS 860/150 June 22, 1990

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# **SECTION 2 - HAZARDOUS INGREDIENTS**

|                                                        | %     | CAS NO                                 | LD <sub>so</sub>                 | LC <sub>so</sub> | Exposure<br>Limits (TWA*)                                 |
|--------------------------------------------------------|-------|----------------------------------------|----------------------------------|------------------|-----------------------------------------------------------|
| Severely treated petroleum distillates and raffinates. | 72-86 | 64741-96-4<br>64742-54-7<br>64742-65-0 | >5g/kg<br>Acute oral<br>(Rats)   | Not found        | 5mg/m <sup>3</sup><br>for mist<br>(OSHA & ACGIH)          |
| Molybdenum disulfide.                                  | 1-2   | 1317-33-5                              | 15g/kg<br>Acute oral<br>(Rats)   | Not found        | 15mg/m <sup>3</sup> (OSHA)<br>10mg/m <sup>3</sup> (ACGIH) |
| Organo-antimony compound                               | 1-3   | Trade<br>secret**                      | 16.4g/kg<br>Acute oral<br>(Rats) | Not found        | 0.5mg/m <sup>3</sup><br>as antimony<br>(OSHA & ACGIH)     |

<sup>\*</sup>TWA = 8-hour time-weighted average.

Note: Exposure limits may vary between jurisdictions. Employers are advised to contact regulatory agencies for the limits in effect in their areas.

# **SECTION 3 - PHYSICAL DATA**

PHYSICAL STATE:

Viscous paste.

**APPEARANCE AND ODOR:** 

Dark grey paste. Faint characteristic odor.

ODOR THRESHOLD (ppm):

Not determined.

VAPOR PRESSURE (mm Hg):

Not determined for this product. For base oil: <0.01, at 20°C/68°F.

VAPOR DENSITY (Air=1):

Not determined for this product.

For base oil: >1

**EVAPORATION RATE** 

(Ether = 1):

Not determined for this product.

For base oil: <1

BOILING POINT (C/F):

Not determined.

<sup>\*\*</sup>Exact chemical identity is being withheld as a trade secret, but health and physical hazards are disclosed in this MSDS. Trade secret exemption application for Canada pending.



FREEZING POINT(\*C/\*F): Not determined.

pH: Not applicable.

SPECIFIC GRAVITY: 0.93 (typical)

PERCENT VOLATILE

Negligible. (By weight):

SOLUBILITY IN WATER: Negligible.

# SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

This product is not classified as flammable or combustible; FLAMMABILITY:

however, it will burn if its temperature reaches or exceeds its

flash point.

**EXTINGUISHING MEDIA:** Dry Chemical, water-fog, chemical foam, or CO<sub>2</sub>. Direct

water-stream may cause frothing.

SPECIAL FIREFIGHTING PROCEDURE: Use water to cool fire-exposed containers. Wear full

emergency equipment with supplied-air respirator (SA), or

self-contained breathing apparatus (SCBA).

**UNUSUAL FIRE & EXPLOSION HAZARDS:** None known.

FLASH POINT (\*C/\*F) AND METHOD: Not determined for this product.

For base fluid: 232/450, ASTM D 92 (C.O.C.)

FIRE POINT (\*C\*/F) AND METHOD: Not determined for this product.

For base fluid: 260/500, ASTM D 92 (C.O.C.)

FLAMMABLE LIMITS (% by volume): Upper: Not determined.

Lower: Not determined.

AUTOIGNITION TEMPERATURE (\*C/F): Not determined.

HAZARDOUS COMBUSTION PRODUCTS: Smoke and toxic gases including lithium oxide and

hydroxide, oxides of antimony, molybdenum, carbon, sulfur, and nitrogen, and small amounts of aromatic and aliphatic

hydrocarbons.

**EXPLOSION SENSITIVITY:** 

Impact:

Sensitive X Not Sensitive Sensitive X Not Sensitive Static Discharge:

**EMPTY/PARTIAL CONTAINER WARNING:** As with most petroleum products, empty or partial containers

may contain explosive vapors. Do not expose to direct flame

or high temperature.

# SECTION 5 - REACTIVITY DATA CHEMICAL STABILITY: X Stable Unstable Conditions to Avoid: Prolonged exposure to elevated temperature. INCOMPATIBILITY: X Yes No Materials to Avoid: Strong oxidizers, acids, and alkalies. HAZARDOUS POLYMERIZATION: Will Occur X Will Not Occur Conditions to Avoid: None. HAZARDOUS DECOMPOSITION PRODUCTS: Smoke and toxic gases including lithium oxide and hydroxide, oxides of antimony, molybdenum, carbon, sulfur, and nitrogen, and small amounts of aromatic and aliphatic hydrocarbons. SECTION 6 - TOXICOLOGICAL PROPERTIES & HEALTH HAZARD DATA **ROUTES OF ENTRY:** Skin Contact X Skin Absorption Eye Contact X Inhalation Ingestion SYMPTOMS AND EFFECTS OF ACUTE EXPOSURE: Skin: May cause skin irritation. Eves: Product, vapors, and mist may cause eye irritation and burning. Inhalation: Vapors may irritate the mucosal membranes of mouth, nose, and throat. Intense and/or prolonged exposure to vapor concentrations exceeding the TLV/PEL may cause headache, nausea, and vomiting. Oil vapors may accumulate in the lungs, and may cause chemical pneumonitis. Ingestion: Ingestion via minor contamination of fingers or food is not likely to cause significant discomfort or adverse effect. However, aspiration (with vomitus) into the lungs may cause mild to severe pulmonary injury, and may be fatal. \*\*\*\*\*

#### STATEMENT ON SYSTEMIC TOXICITY

This product is a paste containing an organo-antimony ingredient, whereas the symptoms and effects detailed below resulted from inorganic antimony compounds dust-inhalation, or direct injection, neither of which is a practical entry route for this product. Furthermore, while no parallel studies on organo-antimony compounds are found, it is prudent to avoid undue exposure.

\*\*\*\*\*



# SYMPTOMS AND EFFECTS OF CHRONIC EXPOSURE:

Prolonged or repeated contact tends to remove natural skin oil, and may Skin:

cause irritation, rash, and possibly dermatitis. Evidence suggests that antimony permeation of the skin can occur in amounts capable of producing

the effects of systemic poisoning.

Product, vapors, and mist may cause eye irritation. Antimony products can Eyes:

cause keratitis and conjunctivitis.

inhalation: Chronic inhalation may produce the same symptoms and effects discussed

under Inhalation - ACUTE EXPOSURE, above.

Inhalation of high levels of antimony trisulfide dust has been reported to cause antimony poisoning characterized by muscular pain, anorexia, weightloss, hair-loss, dry and scaly skin, blood and blood-pressure abnormalities, cardiac injury (T-wave changes), pneumonitis, and acute congestion of the heart, liver, and kidneys. Chronic antimony dust-inhalation has resulted in

death from myocardial failure.

Injection of antimony trisulfide into the abdominal lining of laboratory animals Ingestion:

produced acute antimony poisoning characterized by the same symptoms

and effects detailed in the inhalation subheading, above.

Existing chronic dermal, respiratory, and MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

cardiovascular diseases.

**EXPOSURE LIMITS:** Not determined for this product. See SECTION 2 - HAZARDOUS

INGREDIENTS, in this MSDS, for ingredient(s) limits.

IRRITANCY: Possible irritancy of skin, eyes, mucosal membranes, and respiratory tract.

SENSITIZATION: May cause skin and respiratory sensitization.

Yes X Yes X CARCINOGENICITY: NTP Listed: \_ IARC Listed: \_

IARC Listed: Yes X No OSHA Listed: Yes X No

TERATOGENICITY AND EMBRYOTOXICITY: Reports of teratogenic effects of antimony appear to be

conflicting. Female workers in one antimony processing plant experienced higher incidence of late spontaneous abortions, premature births, and gynecologic problems. Exposure of rats to antimony dust resulted in only 50% of the females becoming pregnant, and those that did, produced fewer offspring. Another study, subjecting female rats to antimony oxide dust, produced no evidence of teratogenic effects in the fetuses. And in yet another study, female rabbits that were fed doses of metallic antimony, experienced frequent abortions; while, in a separate study, no fetal toxicity developed in rats or mice following intramuscular doses of antimony dextran glycoside (RL-712), and there was no antimony penetration of the placenta.

MUTAGENICITY: An in vitro study found an increased incidence of human chromosome

> breakage in leukocytes treated with sodium antimony tartrate. Also, tests of antimony in mammalian cell cultures demonstrated mutagenic activity.

SYNERGISTIC PRODUCTS: When metallic antimony and 3,4-benzopyrene, a carcinogen, were

administered together in an intratracheal dose, the former enhanced the

lung-retention of the latter in rats' lungs.

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# SECTION 7 - PREVENTIVE MEASURES AND PERSONAL PROTECTION

It is unlikely that serious overexposure to this product will occur during normal industrial use. Nevertheless, the user must exercise adequate precautions to protect against accidental spills, and to avoid undue exposure to sprays, mists, or vapors that may be inadvertently generated, especially at elevated temperatures. The following protective measures are recommended whenever undue exposure is unavoidable.

GLOVES:

Oil-impervious and solvent-resistant (e.g. neoprene) type.

RESPIRATOR:

OSHA/NIOSH-approved supplied-air respirator (SA), or self-contained

breathing apparatus (SCBA).

EYE PROTECTION:

Chemical goggles or, preferably, full face-shield. Do not wear contact lenses

in the work area.

FOOTWEAR:

Oil-impervious (e.g. neoprene) cover and anti-slip sole construction.

**CLOTHING:** 

Oil-impervious (e.g., neoprene) apron or, preferably, coveralls.

OTHER PROTECTION:

As deemed necessary.

PERSONAL HYGIENE: Wash hands before eating or smoking. Do not smoke in the work area. Promptly remove contaminated clothing. Immediately clean up any spills, to prevent accidental slipping.

ENGINEERING CONTROLS: General ventilation, normally adequate, should be augmented with local exhaust whenever the TLV/PEL is exceeded, or worker discomfort is reported or observed.

LEAK AND SPILL PROCEDURE: Wear adequate protection and eliminate all sources of ignition. Stop the leak, if it can be safely done. Ventilate the area and dike the spill to prevent entry into sewer or watercourses. Suction or scoop the spill into appropriate disposal or recycling vessels, then cover the spill area with oil-absorbent. Label all waste containers appropriately, including all applicable hazard symbols. If spill enters U.S. navigable waters, the contiguous zone, or adjoining shorelines, notify the Coast Guard National Response Center (Tel. No. 800-424-8802).

WASTE DISPOSAL: Dispose of waste in accordance with applicable Federal, State (or Province), and local laws and regulations. (The services of licensed hazardous waste-disposal facilities may be utilized.) It is the user's responsibility to comply with the U.S. Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act. Refer to Section 10 - REGULATORY INFORMATION, in this MSDS.

HANDLING PROCEDURES & EQUIPMENT: Exercise prudent precautions to avoid accidental spillage, food contamination, vapor or mist inhalation, eye or skin contact, and Ignition of this product.

STORAGE REQUIREMENTS: Store in a clean, dry area below 49°C/120°F, away from all ignition sources and incompatible materials listed in SECTION 5 - REACTIVITY DATA, in this MSDS.

SPECIAL SHIPPING INFORMATION: See SECTIONS 9 & 10. in this MSDS.



# SECTION 8 - FIRST AID AND EMERGENCY MEASURES

SKIN: Wipe off, then wash thoroughly with soap and water.

EYES: Flush immediately with water for at least 15 minutes, occasionally lifting the eyelid. Get prompt medical attention.

INHALATION: Immediately remove the individual to fresh air. If breathing is difficult, administer oxygen. If breathing stops, administer artificial respiration. Keep the individual warm and quiet, and get prompt medical attention.

INGESTION: If the individual is conscious, give 1-2 glasses of milk or water to dilute stomach content. Do not physically induce vomiting. Never give anything by mouth to an unconscious person. As with all accidental chemical ingestions, use all available precautions to prevent aspiration of vomitus into the lungs, which may be fatal. Position the patient's head so as to facilitate expulsion of vomitus. Get prompt medical attention.

NOTE TO PHYSICIAN: Intubate the stomach. Aspirate the pharynx as regularly as possible to remove gagged or vomited stomach content.

# SECTION 9 - TRANSPORTATION INFORMATION

PRODUCT IDENTIFICATION:

Not applicable.

**DOT PROPER SHIPPING NAME:** 

Petroleum oil mixture

DOT HAZARD CLASS:

Not applicable.

DOT LABEL REQUIRED:

None.

IMO CLASS:

Not applicable.

CANADIAN (WHMIS) CLASSIFICATION:

Class: D

Division: 2

Subdivision: B

CANADIAN (TDG ACT) CLASSIFICATION:

Not applicable.

PACKAGING (PACKING) GROUP:

Not applicable.

FREIGHT CLASSIFICATION:

Petroleum Lubricating Grease.

# **SECTION 10 - REGULATORY INFORMATION**

TOXIC SUBSTANCE CONTROL ACT (TSCA): To our best knowledge, all the ingredients in this product have been included, by their manufactures/suppliers, on the TSCA Inventory.

## SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA)

- SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: This product contains the following ingredient(s) on this list: None.
- SECTION 313 TOXIC CHEMICALS: This product contains the following substance(s) at or above the de minimis concentrations: Antimony compound(s) at 3% (max.).
- COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA):
  Reporting of releases of this product is \_X\_ required \_\_\_ not required.
  Antimony compound(s) RQ = 1.0 lb. (CERCLA statutory RQ).
- RESOURCE, CONSERVATION, AND RECOVERY ACT (RCRA): This product contains the following ingredient(s) on the Hazardous Wastes List: None.
- CALIFORNIA HAZARDOUS SUBSTANCES LIST: This product contains the following substance(s) at or above the de minimis concentrations: Antimony compound(s) at 3% (max.); Molybdenum compound(s) at 2% (max.); Oil at 89% (max.).
- CALIFORNIA PROPOSITION 65: This product contains the following substance(s) listed in the Safe Drinking Water and Toxic Enforcement Act of 1986: None.
- MICHIGAN CRITICAL MATERIALS: This product contains the following substance(s) at or above the de minimis concentrations: Antimony compound(s) at 3% (max.); Lithium compound (soap) at 15% (max.).
- CANADA'S WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS): This product contains the following substance(s) at or above the de minimis concentrations: Antimony compound(s) at 3% (max.); Molybdenum compound(s) at 2% (max.).

# SECTION 11 - PREPARATION OF THE MSDS

PREPARED BY:

Nabil N. Saaty, Toxicologist

**TELEPHONE NO.:** 

(213) 679-0271 June 22, 1990

DATE: SUPERSEDES:

February 5, 1990

The information presented herein has been compiled from sources considered to be dependable, and is, to the best knowledge of Tribol, accurate at the time of this writing. The data in this MSDS relates only to the product(s) designated herein. Tribol makes no warranty whatsoever, expressed or implied, regarding the accuracy of this data or the results to be obtained from the use thereof. Tribol assumes no responsibility for injury to buyer or to third persons, or for any damage to property. Buyer assumes all risks.

المام المناسلان 
Telephone: (201)464-8100



Material Safety Data Sheet Page: Rev. Date 08/09/89

#### NITROGEN, REFRIGERATED LIQUID

Airco, Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill, NJ 07974

Emergency Contact: CHEMTREC

Emergency Phone Number: (800)424-9300

# SECTION #1 - IDENTIFICATION

Product: NITROGEN, REFRIGERATED LIQUID

CAS Number: 7727-37-9

Product Code: MSDS CODE G-101 Chemical Family: Inert Gas Chemical Formula: Liquified N2

Molecular Weight: 28.00

ynonyms: G-103

Hazard Rating - Health: 2 Moderate

> - Fire: 0 Negligible Reactivity: 0 Negligible

## SECTION #2 - CHEMICAL COMPONENTS

Component: NITROGEN

Percent of Mixture: 99.9950 to 99.9990 CAS Number: 7727-37-9

Simple Asphyxiant - maintain oxygen

levels above 19.5 percent

# SECTION #3 - PHYSICAL DATA

Boiling Point: -320.4°F -195.8°C
Melting Point: -345.9°F -209.9°C
Vapor Pressure: Above critical temp.
Vapor Density (Air=1): 0.967
Solubility (M20): Noglicible

Solubility (H2O): Negligible

Percent Volatiles: 100

# Material Safety Data Sheet NITROGEN, REFRIGERATED LIQUID

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## SECTION #3 - PHYSICAL DATA Continued...

Appearance

A colorless liquid.

Odor

Odorless.

## SECTION #4 - FIRE FIGHTING & EXPLOSION DATA

Flash Point: None

Lower Explosive Limit (%): None Upper Explosive Limit (%): None

Fire and Explosion Hazards

Non-flammable inert gas!

#### SECTION #5 - EXPOSURE and EFFECTS - INHALATION

# .outes of Exposure - Inhalation

Nitrogen is a simple asphyxiant. Maintain oxygen levels above 19.5% at sea level. Effects of overexposure to high concentrations so as to displace the oxygen in the air necessary for life are headache, dizziness, labored breathing and eventual unconsciousness. Other symptoms may include tightness in the frontal area of the forehead, rapid reduction in the ability to perform movements, loss of tactile sensations, weakened speech leading the inability to utter sounds and tingling of the tongue, fingertips or toes. Nitrogen is nontoxic, but the release of a large amount in a confined area could displace the oxygen in air necessary to support life. It should be recognized that it is possible that none of the above symptoms may occur in nitrogen asphyxia. Thus there are no DEFINITE warning symptoms.

#### First Aid - Inhalation

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

# NITROGEN, REFRIGERATED LIQUID

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## SECTION #5 - EXPOSURE and EFFECTS - SKIN

# Routes of Exposure - Skin

Contact with cryogenic liquid or cold piping can cause tissue freezing or frostbite and cryogenic "burns".

# First Aid - Skin

For dermal contact or frostbite, flush affected area with tepid water. DO NOT USE HOT WATER! A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or in deep tissue freezing.

#### SECTION \$5 - EXPOSURE and EFFECTS - EYES

# Routes of Exposure - Eyes

Contact with cryogenic liquid can cause tissue freezing or frostbite and cryogenic "burns" of the eyes.

# First Aid - Eyes

Never introduce ointment or oil into the eyes without medical advice! In case of freezing or cryogenic "burns" caused by rapidly evaporating liquid, NOT WASH THE EYES WITH HOT OR EVEN TEPID WATER! Remove victim from the source of contamination. Open eyelids wide to allow liquid to evaporate. If pain is present, refer the victim to an ophthalmologist for treatment and follow up. If the victim cannot tolerate light, protect the eyes with a light bandage.

#### SECTION #5 - EXPOSURE and EFFECTS - INGESTION

### Routes of Exposure - Ingestion

None known. Ingestion is unlikely. Large quantities of cryogenic liquid may cause freezing of tissue.

# First Aid - Ingestion

Ingestion is unlikely. Treat in a similar manner as skin contact. Seek medical attention as soon as possible.

#### VITROGEN, REFRIGERATED LIQUID

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#### SECTION #5 - MISCELLANEOUS TOXICOLOGICAL INFORMATION

Carcinogenicity -- NTP: No

IARC: No

OSHA: No

NOTE: Except where specified, the health hazard data and most of the other data in this material safety data sheet are for GASEOUS NITROGEN. One volume of liquid nitrogen at its boiling point and atmospheric pressure will vaporize into approximately 695 volumes of gaseous nitrogen at 70°F (21.1°C) and 1 atmosphere of pressure!

## SECTION #6 - REACTIVITY & POLYMERIZATION

Stability: Stable

Conditions to Avoid (Stability)

None known.

Incompatible Materials

None known.

Hazardous Decomposition Products

"one known.

Hazardous Polymerization: Will not occur.

#### SECTION #7 - SPILL, LEAK, & DISPOSAL PROCEDURES

# Steps to be Taken in The Event of Spills, Leaks, or Release

Evacuate all personnel from affected areas. Use appropriate protective equipment. If leak is in container or container valve, contact CHEMTREC or your closest Airco location for emergency assistance. Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use. Do not enter area without respiratory protection due to asphyxiation hazard.

#### Waste Disposal Methods

Do not attempt to dispose of waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Airco for proper disposal.

VITROGEN, REFRIGERATED LIQUID

Page: 5 Rev. Date 08/09/89

SECTION #7 - SPILL, LEAK, & DISPOSAL PROCEDURES Continued...

SARA Hazard Classes: Sudden Release of Pressure Hazard

## SECTION #8 - SPECIAL PROTECTIVE MEASURES

#### Ventilation

Local exhaust to prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 19.5 percent. Mechanical in accordance with electrical codes.

# Eye Protection

Safety goggles or glasses. For handling the liquid in open vessels, a face shield should be worn in addition to the safety glasses or goggles.

#### Skin Protection

Use loose fitting insulated gloves to prevent frostbite and cryogenic "burns".

# Pespiratory Protection

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

#### Other Protection

Safety shoes.

# SECTION #9 - SPECIAL PRECAUTIONS - STORAGE & HANDLING

# Storage & Handling Conditions

Use only in well-ventilated areas in accordance with manufacturer's and Airco/BOC instructions. These cylinders must ALWAYS be kept upright. Specialized trucks are needed for their movement. Do not drag, slide or roll cylinders. Stationary customer site vessels should be operated in accordance with the manufacturer's and Airco/BOC's instructions. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest Airco/BOC location immediately for assistance. Do not store vessels in sub-surface or closed (poorly ventilated) areas. Nitrogen gas can cause suffocation without warning. Liquid nitrogen is delivered into stationary vacuum jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid" cylinders requiring special handling methods.

### NITROGEN, REFRIGERATED LIQUID

Page: 6 Rev. Date 08/09/89

# SECTION #9 - SPECIAL PRECAUTIONS - STORAGE & HANDLING Continued...

# Storage & Handling Conditions

Consult manufacturer's instructions.

Special Packaging Recommendations: Liquid nitrogen cannot be handled in carbon or low alloy steels. 18-8 and 18-10 stainless steel and copper, copper alloys, nickel, nickel alloys, brass, bronze, silicon alloys, Monel (R) Inconel (R) and beryllium are acceptable.

For additional recommendations, consult Compressed Gas Association Pamphlets P-9, P-12, P-14 and Safety Bulletin SB-2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Liquid density at Boiling Point: 50.46 lb/ft3 (808.3 Kg/m3).

#### SECTION #10 - SHIPPING INFORMATION

Proper Shipping Name: Nitrogen, Refrigerated Liquid

Hazard Class: Nonflammable Gas
OT Identification Number: UN1977

OOT Shipping Label: Nonflammable Gas

#### SECTION #11 - MISC COMMENTS & REFERENCE DOCUMENTATION

Liquid nitrogen vessels should not be refilled except by qualified producers of compressed gases. Shipments of liquid nitrogen vessels, which have not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

#### DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).



# Chemical Division

MSDS NUMBER

# FYROUEL LT

(Fire-Resistant Hydraulic Fluid)

This Material Safety Data Sheet (MSDS) meets the requirements of the OSHA Hazard Communication Standard (29 1910.1200) and the Canadian Controlled Product Regulation, WHMIS classified as: D-2B

New Issue 11/88

Supersedes Issue Dated 11/87 MSDS No. 984412/FYR354

\_\_\_\_\_\_

#### **EMERGENCY TELEPHONE NUMBERS** \_\_\_\_\_

Transportation Emergencies:

USA-CHEMTREC: 1-800-424-9300 CANADA-CANUTEC: 613-996-6666

All Other Emergencies Call:

312-906-7054 

# I. PRODUCT IDENTIFICATION/COMPOSITION

#### COMPOSITION:

Butylated triphenyl phosphate ester (30-40%), CAS Registry Number: NAV.

Triphenyl CAS phosphate (10-15%),Registry Number: 115-86-6.

Diphenyl Phosphate 30%), CAS Registry Number: 29761-21-5.

Petroleum Hydrocarbon Mixture 20%), CAS Registry Number: NAV.

(approx.

# II. PHYSICAL/CHEMICAL PROPERTIES

all following represent available. applicable physical hazard data on this product.

# PHYSICAL STATE/DESCRIPTION:

Clear, amber liquid; slight odor.

# SPECIFIC GRAVITY (WATER = 1):

1.06 at 60°/60°F (15.5°/15.5°C)

#### **VAPOR PRESSURE:**

0.1 mm Hg at 75°F (24°C)

#### POUR POINT:

-40°F (-40°C) max.

#### FLASH POINT:

400°F (204°C), Cleveland Open Cup

#### **AUTOIGNITION TEMPERATURE:**

920°F (493°C)

#### FIRE POINT:

450°F (232°C)

#### WATER SOLUBILITY:

1 g/100 ml

#### VISCOSITY:

145-165 SUS at 100°F (37.8°C)

In Canada: Akzo Chemicals Ltd., 100 University Avenue, Ste. 908, Toronto, Ontario M5J 1V6

Also referred to as a Product Safety Information Sheet

# FYRQUEL® LT

# III. CHEMICAL REACTIVITY

Does not react with air tΩ anv appreciable extent at room temperature. Hydrolyzes with slowly water at elevated temperatures. This process is accelerated by the presence acids or alkalies. No vigorous reactions or evolution of noxious fumes expected with common acids. alkalies, oxidizing and reducing agents under ambient conditions. This product is not sensitive to static discharge.

#### IV. STABILITY

Stable ambient temperature In the absence of moisture, pressure. stable to much higher It temperatures. not shock is will not polymerize sensitive. and requires no special storage facilities.

## V. FIRE HAZARD

Not defined as a fire hazard. Under fire conditions. may support combustion off and decompose to give toxic materials such as phosphoric oxides. However, the product is selfextinguishing the source of once ignition is removed. It is not sensitive to static discharge.

#### VI. FIREFIGHTING TECHNIQUE

Exposure to triphenyl phosphate, which is present in this product, may cause cholinesterase inhibition (refer to SECTION IX: FIRST AID).

Products of combustion are irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon the extent of exposure.

As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate nonessential personnel from the fire area. wear Firefighters should full-face. self-contained breathing apparatus impervious protective clothing.

Use standard firefighting techniques to extinguish fires involving this material. Use water spray, dry chemicals or carbon dioxide.

Keep fire-exposed containers cool with a water spray to prevent rupture due to excessive heat. High pressure water hose may spread product from broken containers increasing contamination or fire hazard.

Contaminated buildings, areas and equipment must not be used until they are properly decontaminated.

#### VII. TOXICOLOGY

#### INGESTION:

The acute oral LD50 is greater than 5000 mg/kg in both male and female rats. A single oral dose of 5000 mg/kg activity, produced decreased physical piloerection, stained fur, lacrimation. chromodacryorrhea, diarrhea and in female mortality rats. A single dose of5000 mg/kg produced oral decreased physical activity, diarrhea, stained fur and no mortality in male rats.

#### SKIN CONTACT:

The acute dermal LD50 is greater than 2000 mg/kg in rabbits. A single dermal application of 2000 mg/kg did not produce signs of toxicity or mortality in rabbits.

Mild irritant to rabbit skin following a 4-hour exposure period.

# FYRQUEL® LT

## EYE CONTACT:

Non-irritant to rabbit eyes.

#### INHALATION:

The acute inhalation LC50 for Isodecyl diphenyl phosphate, a component of this product, is greater than 2.2 mg/l in rats.

T-11417

## VIII. HUMAN HEALTH

Principal routes of exposure are skin contact with the liquid and inhalation of its mists and vapors. Prolonged skin contact with the product may result in mild irritation.

The product contains triphenyl phosphate which has been reported cholinesterase inhibition in Symptoms of cholinesterase humans (1). inhibition may include salivation. headache. sweating. nausea. muscle twitching, tremors. incoordination. blurred vision, tears, abdominal cramps, diarrhea and chest discomfort.

product contains а petroleum hydrocarbon mixture. Inhalation high concentrations of mists or vapors this product may cause headache. dizziness. confusion, excitement, drowsiness or coma.

There are no data available which address medical conditions that are generally recognized as being aggravated by exposure to this product.

## IX. FIRST AID

CALL A POISON CENTER OR A PHYSICIAN IMMEDIATELY.

If known exposure occurs  $0^{r}$ is immediately the suspected. start recommended procedures below and simultaneously contact a Poison Center, a physician or the nearest hospital.

NOTE: Be sure to advise the person triphenyl phosphate, a contacted that product, has been component of this cholinesterase be a reported to Inform the inhibitor in humans (1). person contacted of the type and extent of exposure. describe the victim's symptoms and follow the advice given.

#### NOTE TO MEDICAL PERSONNEL:

this product cause Exposure to may cholinesterase inhibition. If cholininhibition suspected. esterase is atropine bv injection is antidotal. is 2-PAM (Protopam chloride) also antidotal when administered early in conjunction with atropine.

#### INGESTION:

If swallowed, immediately give several glasses of water and induce vomiting by gagging the victim with a finger placed on the back of the victim's tongue. Give fluids until vomitus is clear. If victim is unconscious or convulsing, do not induce vomiting or give anything by mouth.

# SKIN CONTACT:

Flush all affected areas with plenty of water for several minutes. Remove and clean any contaminated clothing and shoes. Seek medical attention if skin irritation occurs.

# **EYE CONTACT:**

Flush the eyes with plenty of running water for several minutes. Seek medical attention if eye irritation occurs.

# FYRQUEL® LT

#### INHALATION:

If inhaled, remove to fresh air. Seek medical attention if respiratory irritation occurs or if breathing becomes difficult.

#### X. INDUSTRIAL HYGIENE

The recommendations described in this provided general section аге as guidance for minimizing exposure when handling this product. Because use conditions will vary depending upon applications, customer a person knowledgeable ofthe intended conditions and equipment should develop procedures specific safe handling and personal select appropriate protective equipment. During the development of safe handling procedures. consideration given should be to the need for equipment of and cleaning piping to render them nonhazardous systems before maintenance and repair activities are performed.

#### **ENGINEERING CONTROLS:**

those cases where engineering controls indicated by the are use following conditions, the traditional exposure control techniques may be used effectively minimize employee exposure: local exhaust ventilation. enclosed system design, process isolation and remote control in combination with appropriate use ofpersonal protective equipment.

## INGESTION:

All food must be kept in a separate from the away storage/use Eating, drinking, location. smoking and carrying of tobacco products must be prevented in areas where there is a potentia for exposure to this

material. Before eating, drinking, smoking, etc., hands and face must be thoroughly washed.

#### SKIN PROTECTION:

Skin contact with liquid or its aerosol should be minimized through the use of suitable protective clothing, gloves and footwear. Unprotected skin exposed to vapors, aerosol or mist should be thoroughly washed at the end of the work shift.

#### EYE PROTECTION:

Eye contact with liquid or its aerosol should be avoided through the use of chemical safety glasses, goggles or a face shield.

## RESPIRATORY PROTECTION:

use conditions generate aerosol, the material should be handled open outdoor) (e.g., well-ventilated area. Where adequate ventilation is available. not NIOSH-approved, organic respirators with dust, mist fume and filter to reduce exposure. Where exposure potential under the use conditions necessitates a higher protection. use a positive-pressure, air-supplied respirator.

#### **EXPOSURE LIMITS:**

exposure No limits have been established for this product. However. product contains triphenyl which phosphate for following the exposure limits apply:

Federal OSHA Permissible Exposure Limit (PEL): 3 mg/m<sup>3</sup>) as an 8-hour, time-weighted average (2).

# FYROUEL® LT

Recommended Threshold Limit Value (TLV): 3 mg/m<sup>3</sup> as an 8-hour, time-weighted average (2).

PELs and TLVs refer to airborne concentrations measured in the breathing zone by appropriate sampling techniques.

# XI. SPILL HANDLING

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices (refer to SECTION X: INDUSTRIAL HYGIENE).

Anv person entering either significant spill area or an area of unknown concentration of an aerosol should use self-contained positive-pressure, breathing apparatus or a positivepressure. air-supplied respirator escape pack.

Soak up pooled liquid with a suitable absorbent such as clay, sawdust kitty litter. Sweep up absorbed material being careful not to create a chemical waste dust, and place in for disposal (refer SECTION XIV: DISPOSAL OF MATERIAL/ CONTAINER). Generously with slurry contaminated area a household, powdered laundry common, Using a stiff detergent and water. brush, work the slurry into cracks and stand for 2-3 Allow to minutes then flush with water. Repeat if necessary.

Large spills should be diked and pumped to salvage according to a predetermined plan.

# XII. <u>CORROSIVITY TO MATERIALS OF</u> CONSTRUCTION

Noncorrosive glass and metals. to has the product However, because it may soften plasticizing properties, plastics and deteriorate certain elastomers (particularly vinyl-based resins, neoprene and natural rubbers).

# XIII. STORAGE REQUIREMENTS

Containers should be stored in a cool, dry, well-ventilated area away from flammable materials and sources of heat or flame. Store away from foodstuffs or animal feed. Exercise due caution to prevent damage to or leakage from the container.

elevated storage Prolonged at alkaline temperatures under wet conditions should be avoided. Саге should be taken to prevent moisture condensation in the container.

steel is the preferred Carbon material construction for storage The material is commonly containers. shipped unlined tank in cars. trucks and drums.

# XIV. DISPOSAL OF MATERIAL/CONTAINER

Material that cannot be used chemically reprocessed and empty containers should be disposed of facility approved in accordance with applicable regulations. NOTE: State and local regulations may be more stringent than federal.

#### XV. PREPARATION INFORMATION

Prepared by: Product Stewardship, Akzo Chemicals Inc., Chicago, Illinois, (312)906-7500.

## FYRQUEL® LT

#### REFERENCES CITED:

- (1) American Conference of Governmental Industrial Hygienists (ACGIH), Documentation of the Threshold Limit Values for Substances in Workroom Air, 5th ed., ACGIH: Cincinnati, OH, pg. 613, 1986.
- (2) 29 CFR 1910.1000
- (3) American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1988-89, ACGIH: Cincinnati, OH, 1988.

MATERIAL SAFETY | BASE Corporation Chemicals Division 100 Cherry Hill Road, Persippeny, New Jersey 07054. (201) 316-3000

### DATA SHEET

DERRO COPPER PRODUCTS COMPANY MSDS NUMBER - COPC-00-0302

| DATA SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                | MSDS N        | UMBER                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------|--------------------------------------------------------|
| PRODUCT NUMBER: 526251 EP-290                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                | 255525<br>145 |                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SECTIC                         |               |                                                        |
| TRADE NAME: EP-290                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |               |                                                        |
| CHEMICAL NAME: N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |               |                                                        |
| SYNONYMS: Heavy 0x0 Ends; HOE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | FOR                            | MULA: M       | lixture                                                |
| CHEMICAL FAMILY: Dxo Compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                |               | MOL WGT.: N/A                                          |
| SECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | N II - ING                     | REDIEN        | TS                                                     |
| COMPONENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CAS NO.                        | %             | PEL/TLV - SOURCE                                       |
| EP-290<br>Contains:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 68526-82-9                     | 100           | Not established                                        |
| Undecyl Alcohol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 68516-18-7                     | -4            | Not established                                        |
| Higher Alcohols                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                | ~58-66        | Not established                                        |
| SARA Title III Sect. 313: Not listed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |               |                                                        |
| SARA Title III Sect. 313: Not listed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |               |                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                |               |                                                        |
| SECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | III - PHYS                     | ICAL D        | ATA .                                                  |
| BOILING/MELTING POINT #780 mm Hg: >230                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | F P 20 mm Hg                   | рн: 5.        | 9-8.0                                                  |
| VAPOR PRESSURE mm Hg #20 C: <0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ·····                          | Meltir        | ng point: N/A                                          |
| SPECIFIC GRAVITY OR BULK DENSITY: 0.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 857 • 25°C                     |               |                                                        |
| SOLUBILITY IN WATER: <0.1 % € 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                | Color:        | Straw                                                  |
| APPEARANCE: Clear liquid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ODOR: Characte                 | eristic       | INTENSITY: Mild                                        |
| SECTION IV - FIRE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AND EXPL                       | OSION         | HAZARD DATA                                            |
| FLASH POINT (TEST METHOD): >230°F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (T.C.C.)                       |               | AUTOIGNITION TEMP: N/A                                 |
| FLAMMABILITY LIMITS IN AIR (% BY VOL)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LOWER: N                       | /A            | UPPER: N/A                                             |
| EXTINGUISHING Use water fog, ald extinguishing med                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | cohol foam, CO:                | or dry c      | chemical                                               |
| SPECIAL Firefighters should breathing apparatument fective but should be sho | us and turn out                | t gear. Wa    | -contained<br>iter may be inef-<br>id containers cool. |
| UNUSUAL FIRE NODE. AND EXPLOSION HAZARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |               |                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | v. Sec. 2017. Tull de decembre |               |                                                        |

EMERGENCY TELEPHONE NUMBER

201-316-3000 THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

CHEMTREC 800-424-9300

#### SECTION V - HEALTH DATA

#### TOXICOLOGICAL TEST DATA:

Rat. Oral LD50 Rabbit, Dermal LD50

Rabbit, Eye Irritation (1.3/110) Rabbit, Skin Irritation (1.8/8.0)

>15,800 mg/kg. >7.940 mg/kg.

**RESULT:** 

Slightly irritating.

Rabbit, Skin Irritation (1.8/8.0) Slightly irritating.
Rat, Inhalation Screen - 1 of 10 rats died after exposure to 4.9 mg/l (exoends/air) for 4 hours. Slightly toxic if inhaled.

Human repeated insult patch test - based on studies with 55 volunteers, not a primary irritant, cumulative irritant or sensitizer.

#### EFFECTS OF OVEREXPOSURE:

May cause slight irritation of the skin and eyes if repeated or prolonged contact occurs. May cause defatting of the skin and dermatitis upon repeated skin contact.

#### FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes.

If irritation develops, consult a physician. Skin-Wash affected areas with soap and water. Remove and launder contaminated clothing before reuse. If irritation develops, consult a physician.

Ingestion-If swallowed, dilute with water and immediately induce vomiting. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Get immediate medical attention.

Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

#### SECTION VI - REACTIVITY DATA

STABILITY:

Stable

CONDITIONS TO AVOID:

Excessive heat and ignition sources.

CHEMICAL INCOMPATIBILITY:

Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

∞,∞2.

HAZARDOUS POLYMERIZATION: CONDITIONS TO AVOID:

Does not occur

N/A

CORROSIVE TO METAL:

No

OXIDIZER: No

#### SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION: NIOSH/MSHA-approved organic vapor respirator as necessary.

EYE PROTECTION:

Chemical goggles.

PROTECTIVE CLOTHING:

Gloves, coveralls, apron, boots as necessary to prevent

skin contact.

VENTILATION: Use local exhaust to control vapors/mists.

OTHER:

Eyewash fountains and safety showers should be easily accessible.

| PRODUCT NUMBER: 526251 EP-290                                                                                            |                                                                            |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| SECTION VIII - ENVIR                                                                                                     | RONMENTAL DATA                                                             |
| ENVIRONMENTAL TOXICITY DATA:                                                                                             |                                                                            |
| 48 hour LC50, Daphnia magna: 0.17 mg/<br>96 hour LC50, Rainbow trout: >1000 mg.<br>96 hour LC50, Bluegill sunfish: >1000 | /1. practically nontoxic                                                   |
| SPILL AND LEAK PROCEDURES:                                                                                               |                                                                            |
| Spills should be contained, solidified for disposal. This material is not re("Superfund").                               |                                                                            |
| HAZARDOUS SUBSTANCE SUPERFUND: No                                                                                        | RQ (lbs):                                                                  |
| WASTE DISPOSAL METHOD:                                                                                                   |                                                                            |
| Incinerate or bury in a licensed faci<br>Do not discharge into waterways or se                                           | lity.<br>wer systems without proper authority.                             |
| HAZARDOUS WASTE 40CFR261: No                                                                                             | HAZARDOUS WASTE NUMBER:                                                    |
| CONTAINER DISPOSAL:                                                                                                      |                                                                            |
| Dispose of in licensed facility. Recommend crushing or other means to                                                    | prevent unauthorized reuse.                                                |
| SECTION IX - SHIF                                                                                                        |                                                                            |
| D.O.T. PROPER SHIPPING NAME (49CFR172.101-                                                                               | 102) HAZARDOUS SUBSTANCE<br>(49CFR CERCLA LIST)                            |
| None                                                                                                                     | No                                                                         |
|                                                                                                                          | REPORTABLE QUANTITY (RQ) N/A                                               |
| D.O.T. HAZARD CLASSIFICATION (CFR172.101-10 PRIMARY                                                                      | SECONDARY                                                                  |
| None                                                                                                                     |                                                                            |
| D.O.T. LABELS REQUIRED (49CFR172.101-102)                                                                                | D.O.T. PLACARDS POISON CONSTITUENT REQUIRED (CFR172.504) (49CFR172.203(K)) |
| None                                                                                                                     | None                                                                       |
|                                                                                                                          |                                                                            |
| BILL OF LADING DESCRIPTION                                                                                               |                                                                            |
| Inedible Fatty Alcohols, petroleum                                                                                       | n, NOIBN                                                                   |
|                                                                                                                          |                                                                            |
| CC NO. 880                                                                                                               | UN/NA CODEN/A                                                              |

WHILE BASE CORPORATION BELIEVES THE DATA SET FORTH HEREIN ARE ACCURATE AS OF THE DATE HEREOF, BASE CORPORATION MAKES NO WARRANTY WITH RESPECT THERETO AND EXPRESSLY DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. SUCH DATA ARE OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION.

UPDATED:

DATE PREPARED:

9 / 4 / 86

12 / 2 / 88

#### SECTION X - PRODUCT LABEL

EP-290

CAUTION:

PROLONGED OR REPEATED CONTACT WITH EYES AND SKIN MAY RESULT IN SLIGHT IRRITATION. DEFATTING OF THE SKIN AND DERMATITIS MAY OCCUR UPON REPEATED SKIN CONTACT.

Use with local exhaust. Wear a NIOSH-MSHA approved organic vapor respirator, chemical goggles, gloves, coveralls, apron, boots and other protective clothing as necessary to prevent contact. Eyewash fountains and safety showers must be easily accessible.

Eyes-Immediately wash eyes with running water for 15 minutes.

If irritation develops, consult a physician. Skin-Wash affected areas with soap and water. Remove and launder contaminated clothing before reuse. If irritation develops, consult a physician.

Ingestion-If swallowed, dilute with water and immediately induce vomiting. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Get immediate medical attention.

Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

STORAGE AND HANDLING: Avoid excessive heat and sources of ignition.

IN CASE OF FIRE: Use water fog, foam, CO2 or dry chemical extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

EMPTY CONTAINERS: All labeled precautions must be observed when handling. storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMIREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions.

Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

CAS No.: 68526-82-9. Made in USA. Basic Organic Chemicals 1288

## U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1317

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Healt Shipbuilding, and Shipbreaking (2

|                                                                                                      | <u> </u>                              |  |
|------------------------------------------------------------------------------------------------------|---------------------------------------|--|
| SECTI                                                                                                | 01                                    |  |
| MANUFACTURER'S NAME                                                                                  | EMERGENCY TELEPHONE NO.               |  |
| BIG RIVER-ZINC CORPORATION                                                                           | 618-274-5000                          |  |
| ADDRESS (Number, Street, City, State, and 21P Code) Route 3 & Monsanto Avenue Sauget, Illinois 62201 |                                       |  |
| CHEMICAL NAME AND SYNONYMS                                                                           | TRADE NAME AND SYNONYMS Sulfuric Acid |  |
| Sulfuric Acid<br>chemical ramily                                                                     | R2804 CAS No. 7664-93-9               |  |

| SECTION                           | 111 - | HAZAF           | ROOUS INGREDIENTS                                 |    |                |
|-----------------------------------|-------|-----------------|---------------------------------------------------|----|----------------|
| PAINTS, PRESERVATIVES, & SOLVENTS | *     | TLV<br>(Unital) | ALLOYS AND METALLIC COATINGS                      | ×  | TLV<br>(Units) |
| PIGMENTS                          |       |                 | BASE METAL                                        |    |                |
| CATALYST                          |       |                 | ALLOYS                                            |    |                |
| VEHICLE                           |       |                 | METALLIC COATINGS                                 |    |                |
| SOLVENTS                          |       |                 | FILLER METAL<br>PLUS COATING OR CORE FLUX         |    |                |
| ADDITIVES                         |       |                 | OTHERS                                            |    |                |
| OTHERS                            |       |                 |                                                   |    |                |
| HAZARDOUS MIXTURE                 | SOF   | OTHER LI        | QUIDS, SOLIDS, OR GASES                           | *  | (Units)        |
|                                   |       | н:              | vdrogen Sulfate (H <sub>2</sub> SO <sub>4</sub> ) | 93 | l mg/          |
|                                   |       | W               | ater                                              | 17 |                |
|                                   |       |                 | •                                                 |    |                |
|                                   |       |                 |                                                   |    |                |

| S                             | ECTION III - | PHYSICAL DATA                      |       |
|-------------------------------|--------------|------------------------------------|-------|
| BOILING POINT (°F.)           | 535          | SPECIFIC GRAVITY (H2O=1)           | 1.835 |
| VAPOR PRESSURE (mm Hg.)       |              | PERCENT, VOLATILE<br>BY VOLUME (%) |       |
| VAPOR DENSITY (AIR=1)         |              | EVAPORATION RATE                   |       |
| SOLUBILITY IN WATER           | 100%         | Melting Point                      | -31°F |
| APPEARANCE AND ODOR Colorless | , oilv liqui | d. Mav have weak acid odor.        |       |

| Non-flammable                                                         | FLAMMABLE LIMITS     | اما         | Uei         |
|-----------------------------------------------------------------------|----------------------|-------------|-------------|
| TINGUISHING MEDIA DO NOT ADD WATER OR O                               | OTHER LIQUID TO ACID |             | <del></del> |
| PECIAL FIRE FIGHTING PROCEDURES Acid diluted with water will liberate |                      | with metals | ·           |
|                                                                       |                      |             |             |

|                                                                                                                                                                                               | <del></del>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    |                                  |                          |                                  |              |             |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------|--------------------|----------------------------------|--------------------------|----------------------------------|--------------|-------------|---------------|
|                                                                                                                                                                                               |                                                     | SE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | CTION                                                | <b>V</b> • H                                 | EAL                | TH HAZA                          | RD D                     | ATA                              |              |             |               |
| HRESHOLD LIMIT                                                                                                                                                                                |                                                     | l mg/r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <sub>m</sub> 3                                       |                                              |                    |                                  |                          |                                  |              |             |               |
| Rapid burn                                                                                                                                                                                    | ning of e                                           | yes and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | d skin                                               | on co                                        | ntac               | t. Inha                          | alatio                   | n of t                           | nist ma      | y damag     | e             |
| respirator                                                                                                                                                                                    | ry tract.                                           | Inge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | stion m                                              | nay ca                                       | use                | death.                           |                          |                                  |              |             |               |
| MERGENCY AND                                                                                                                                                                                  | ly wash e                                           | ROCEDU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | aes<br>d skin                                        | with                                         | runr               | ning wate                        | er for                   | an e                             | ctende       | d period    | of time       |
| If ingest                                                                                                                                                                                     |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ~~~~~~                                               |                                              |                    |                                  |                          |                                  |              |             |               |
| of magnes:                                                                                                                                                                                    |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    |                                  |                          |                                  |              |             |               |
|                                                                                                                                                                                               |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    |                                  |                          |                                  |              |             |               |
|                                                                                                                                                                                               |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SECTIO                                               | NVI                                          | · PS               | ACTIVIT                          | Y DA                     | TA                               |              |             | •             |
| TABILITY                                                                                                                                                                                      | UNSTAB                                              | LE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      | COMO                                         | ITION              | S TO AVOID                       | )                        |                                  |              |             |               |
|                                                                                                                                                                                               | STABLE                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | х                                                    |                                              |                    |                                  |                          |                                  | ·········    |             |               |
| NCOMPATABILIT                                                                                                                                                                                 | Meterals                                            | TO ACID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | )                                                    | <u></u>                                      |                    | 1                                |                          |                                  |              |             |               |
| AZARDOUS DEC<br>Reacts wi                                                                                                                                                                     |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      | SETO                                         | ng 0:              | vidizina                         | 2000                     | <del></del>                      |              | <del></del> |               |
|                                                                                                                                                                                               |                                                     | AY OCCUP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      |                                              |                    | CONDITIO                         | NS TO                    | AVOID                            | <del></del>  |             |               |
| HAZARDOUS<br>POLYMERIZATIOI                                                                                                                                                                   | N -                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    |                                  |                          |                                  |              |             | <del></del> - |
|                                                                                                                                                                                               |                                                     | ILL NOT C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | - CCOR                                               |                                              | <u> </u>           | <u> </u>                         |                          |                                  |              |             |               |
|                                                                                                                                                                                               |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    |                                  |                          |                                  |              |             |               |
|                                                                                                                                                                                               |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                              |                    | OR LEAK                          | PROC                     | EDUR                             | ES           |             |               |
| STEPS TO BE TAN<br>Dilute wi                                                                                                                                                                  |                                                     | E MATERI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | AL IS RE                                             | LEASED                                       | ORS                | PILLED                           |                          | <del></del>                      |              | h or li     | me            |
|                                                                                                                                                                                               |                                                     | E MATERI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | AL IS RE                                             | LEASED                                       | ORS                | PILLED                           |                          | <del></del>                      |              | h or li     | me            |
| Dilute wi                                                                                                                                                                                     | th exces                                            | E MATERI<br>Sive an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AL IS REI                                            | LEASED<br>f wat                              | OR S               | PILLED<br>I Deutra               | lize                     | <del></del>                      |              | h or li     | me            |
| Dilute wi                                                                                                                                                                                     | th exces                                            | E MATERI<br>Sive an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AL IS REI                                            | LEASED<br>f wat                              | OR S               | PILLED<br>I Deutra               | lize                     | <del></del>                      |              | h or li     | me            |
| Dilute wi                                                                                                                                                                                     | th exces                                            | E MATERI<br>Sive an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AL IS REI                                            | LEASED<br>f wat                              | OR S               | PILLED<br>I Deutra               | lize                     | <del></del>                      |              | h or li     | me            |
| Dilute wi                                                                                                                                                                                     | L METHOD                                            | e MAYERI<br>Sive an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AL IS REI                                            | leased<br>f wat                              | er o               | r neutra                         | nts                      | with s                           | oda as       |             | me            |
| Dilute wi                                                                                                                                                                                     | L METHOD ith feder                                  | e MATERI<br>Sive and<br>al, sta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | AL IS REI                                            | loca SPECI                                   | er o               | PILLED I NEUTTA                  | ilize<br>its             | wirh s                           | oda as       |             |               |
| Dilute wi                                                                                                                                                                                     | L METHOD ith feder SI                               | al, sta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AL IS REI                                            | loca SPECI                                   | er o               | PILLED I NEUTTA                  | ilize<br>its             | wirh s                           | oda as       |             |               |
| Dilute wi                                                                                                                                                                                     | L METHOD ith feder SI PROTECTION red respi          | ECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | VIII -                                               | loca SPECI                                   | l re               | PILLED I NEUTTA                  | ION IN                   | wirh s                           | oda as       |             |               |
| Dilute wi                                                                                                                                                                                     | L METHOD ith feder SI PROTECTION yed respi          | ECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | VIII .                                               | loca  SPECI  tion sacid                      | l re               | PROTECT exposed                  | ION IN                   | wirh s                           | oda as       |             |               |
| Dilute wi                                                                                                                                                                                     | SI PROTECTION YES, MECHALLERS                       | ECTION  (Specify ratory)  EXHAUST  to max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | VIII .                                               | loca  SPECI  tion sacid                      | l re               | PROTECT exposed                  | ION IN                   | NFORM<br>cid in                  | IATION exces | s of th     |               |
| Dilute wi                                                                                                                                                                                     | SI PROTECTION TECH TEST                             | ECTION  (Specify reactory)  EXHAUST  TO MAINT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VIII -                                               | loca  SPECI  tion to acid  TLV               | l re               | PROTECT exposed r and mi         | ION IN to a st           | VIFORM  cid in  SPECIA  OTHE     | IATION exces | s of th     |               |
| Dilute wi                                                                                                                                                                                     | SI Section red respi                                | ECTION  (Specify fractory)  EXHAUST  TO man  MICAL (Control of the control of the | VIII -  ype) protec intain enoull uw the             | loca  SPECI  tion to acid TLV                | l re ALP when vapo | PROTECT exposed r and mi         | ION IN to a st           | NFORM cid in SPECIA OTHE         | IATION exces | s of th     |               |
| Dilute wi                                                                                                                                                                                     | SI PROTECTION TEST TOCAL YES, MECHA EQUIP SUIT, apr | ECTION  (Specify reaction)  EXHAUST  TO METAL  MENT  TO DETAL  MENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | VIII -  Protectintain  Control  SECTIO               | loca  loca  SPECI  tion to acid  TLV  event  | ALP when vapo      | PROTECT exposed r and mi         | ION IN to a st           | NFORM cid in SPECIA OTHE         | IATION exces | s of th     |               |
| RESPIRATORY POSSET COMPLY WITH ATTOM PROTECTIVE GUNDER PROTECT RUBBET STANDER PROTECT RUBBET STANDER PROTECT RUBBET STANDER PRECAUTIONS                                                       | SI PROTECTION TEST TOCAL YES, MECHA EQUIP SUIT, apr | ECTION  (Specify ratory)  EXHAUST  TO METAL  MENT  TO DETAL  N IN HAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | VIII -  ype protectintain  energy  Energy  SECTIO    | loca  loca  SPECI  tion to acid  TLV  revent | ALP when vapo      | PROTECT exposed r and mi EYE PRO | ION IN  to a  st  Chemic | NFORM cid in SPECIA OTHE Ch acid | IATION exces | s of th     | e TLV         |
| Dilute wi<br>waste disposate<br>Comply wi<br>Comply wi<br>RESPIRATORY P<br>NIOSH approv<br>VENTILATION<br>PROTECTIVE GL<br>RUDDET S<br>OTHER PROTECT<br>RUDDET S<br>PRECAUTIONS S<br>Store in | SINGULAR PROPERTY OF STIVE EQUIP SUIT, apr          | ECTION  (Specify ratory)  EXHAUST  TO man  MICAL (GATE)  MIN MAN  ENTITED ETC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VIII .  VPE)  protec  intain  checkly  to pr  SECTIO | loca  SPECI  tion to acid  TLV  revent       | ALP when vapo      | PROTECT exposed r and mi EYE PRO | ION IN  to a  st  Chemic | NFORM cid in SPECIA OTHE Ch acid | IATION exces | s of th     | e TLV         |
| RESPIRATORY P NIOSH approv VENTILATION  PROTECTIVE GL RUDDET S RUDDET S PRECAUTIONS  Store 1:                                                                                                 | SINGULAR PROPERTY OF STIVE EQUIP SUIT, apr          | ECTION  (Specify ratory)  EXHAUST  TO man  MICAL (GATE)  MIN MAN  ENTITED ETC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VIII .  VPE)  protec  intain  checkly  to pr  SECTIO | loca  SPECI  tion to acid  TLV  revent       | ALP when vapo      | PROTECT exposed r and mi EYE PRO | ION IN  to a  st  Chemic | NFORM cid in SPECIA OTHE Ch acid | IATION exces | s of th     | e TLV         |

PAGE (2)

Any questions concerning this MSDS should be addressed to:

BIG RIVER ZINC CORPORATION
ROUTE 3 & MONSANTO AVENUE SAUGET. ILLINOIS 62201

Form OSHA-20 Rev. May 72



CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-GG-0304

COMBUSTION ENGINEERING, INC. CORPORATE HEALTH & SAFETY

WINDSOR, CT

Phone: (203) 285-9693

MANUFACTURER: BASIC INCORPORATED

ADDRESS: Subsidiary of Combustion

Engineering, Inc. P. O. Box 828

**GUNCLASE** 

Valley Forge, PA 19482

(215) 337-1100 Phone:

SECTION I, MATERIAL IDENTIFICATION

Material Name: GUNCLASE ®

Types: GUNCLASE E, GUNCLASE EF Description: Inorganic Mixutre

GUNCLASE's a granular basic refractory consisting of high-purity periclase

(MgO) with a chromic acid bond.

INGREDIENTS AND HAZARDS SECTION II,

| Ingredient Name | CAS        | %               | IARC or OSHA 1910(z) (specify) |
|-----------------|------------|-----------------|--------------------------------|
| Magnesite       | 1309-48-4  | 95 <del>T</del> | No                             |
| Boric Acid      | 10043-35-3 | 1- 2            | No                             |
| Chromic Acid    | 1332-82-0  | 1- 2            | Yes, NTP                       |

The PEL/TLV for this mixture is 2.9 mg/m<sup>3</sup>\* respirable dust.

Chromic Acid is listed in the National Toxicology Program's (NTP) third annual report on carcinogens with an OSHA Permissible Exposure Limit (PEL) for an 8 hour timeweighted average of 0.1 mg/m<sup>3</sup> maximum. Refer to Section VI for applicable Health Hazard data and Section VIII for Special Protection information and comments.

#### SECTION III, PHYSICAL DATA

Appearance and odor: Light yellow green, no distinguishable odor.

Boiling Point: NA

Vapor Pressure: NA Water Solubility (%): 2

Vapor Density (Air=1): NA

Evaporation Rate: NA

Specific Gravity (water=1): 2.7

Melting Point: NA % Volatile by Wt: 0 PH (10% Sol.): 3-4

SECTION IV, FIRE AND EXPLOSION DATA

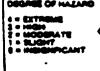
Unusual fire or explosion hazard: None

This product is non-combustible. Use extinguishing media appropriate to the surrounding area.

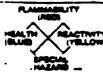
#### SECTION V, REACTIVITY DATA

This material is stable; however, it hydrates slowly with the generation of some heat and should be kept dry. Avoid organic material, contains strong oxidizer.

Avoid accidental water leaching of Chromic Acid.







H.M.I.S.

(215) 337-1100 TWX: 510-660-4837

#### SECTION VI, HEALTH HAZARD DATA

Dust from GUNCLASE can cause irritation to the eyes on contact. Acid crystals or concentrations of chromic acid to the skin can cause severe burns. Swallowing may cause severe injury or death.

#### Emergency and First Aid Procedures

Eyes: Promptly flush 15 minutes or more with water. Consult physician.

Skin: Flush and wash with water and a mild soap.

Inhalation: Irrigate nose and mouth with salt water.

Ingestion: Induce vomiting and drink olive oil.

Chromic Acid is listed in the National Toxicology Program's (NTP) third annual report on carcinogens with an OSHA Permissible Exposure Limit (PEL) for an 8 hour time-weighted average of 0.1 mg/m maximum.

#### SECTION VII, SPILL, LEAK AND DISPOSAL

Pick up by scooping, sweeping or vacuum. Avoid raising dust clouds. Flush area with water. Neutralize with soda ash.

DISPOSAL: Consult local State and Federal disposal regulation to determine correct method.

#### SECTION VIII, SPECIAL PROTECTION INFORMATION

Provide adequate general and local exhaust ventilation to meet PEL requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed PEL. A NIOSH approved half face piece respirator can be used for exposures up to 10X PEL. Protect eyes, skin and open cuts from dust, mists and splashes.

Workers should wear goggles for eye protection, gloves, and protective clothing appropriate for the work situation.

#### SECTION IX, SPECIAL PRECAUTIONS AND COMMENTS

Keep dust in work area at a minimum and maintain air concentration of dust as far below PEL as feasible. Use good housekeeping techniques, such as, vacuuming to remove collected dust and prevent formation of dust clouds. Avoid inhalation of dust. Avoid eye contact or prolonged skin contact with material. Tear out of refractory materials may lead to the generation of substantial concentrations of dust. Workers should be advised of the potential hazards and trained in proper use of protective equipment.

Although reasonable care has been taken in the preparation of the information contained herein, Combustion Engineering, Inc. extends no warranties, makes no representation and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

Prepared By: Al Momme QC Engineer

DATE PREPARED: 9/76

REVISED: 8/85 10/85 11/85 3/86 8/87 12/87 3/88

PRODUCT #: MP524-MP526-MP543

#### MATERIAL SAFETY DATA SHEET

LINDEN. N. J. 03036

COOK'S INDUSTRIAL LUBRIC: CERRO COPPER FRODUCTS COMPANY.

5 NORTH STILES STREET MSDS NUMBER - COPO-03-0304

REUISION DATE 13-JUL-89

DATE ISSUED 21-AUG-98

| IDENTIFICATION A |  | EMERCENCY | INFORMATION |
|------------------|--|-----------|-------------|
|------------------|--|-----------|-------------|

COOK'S PRODUCT NAME:

COOK'S DRAW 1575

COOK'S PRODUCT #:

A2A902A

CHEMICAL NAME:

Mixture of Petroleum Scap-based

Grease and Graphite

CAS #'S:

Mixture

PRODUCT APPEARANCE AND ODOR:

Grey Gel, petroleum odor

CHEMICAL FAMILY:

Petroleum hydrocarbon

SYNONYMS:

Petroleum-based Grease

EMERGENCY TELEPHONE:

(201) 862-2500

#### COMPONENTS AND HAZARD INFORMATION

COMPONENTS:

W/W HAZARD DATA (TLV, LD50, LC50, ETC. ):

troleum-based lubricating oil

CAS #'S

64742-53-6 or

64742-52-5

TLU 5 mg. /meter cubed

(as an oil mist)

Graphite CAS # 7782-42-5

PEL 15 MPPCF

Fatty acids, tallow, calcium salts

CAS #

64755-01-7

Proprietary additives

n/e

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health

Flammability

Reactivity

Basis

1

0

Recommended by Exxon

#### TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

ICC: Compound or lubricant. Metal cutting, drawing or drilling.

Dry, liquid or paste. NOI

#### EMERCENCY FIRST AID

EYE CONTACT:

\*\* splashed into the eyes, flush with clear water for 15 minutes or until ritation subsides. If irritation persists, call a physician.

#### EMERGENCY FIRST AID

#### SKIN CONTACT:

In case of skin contact, remove contaminated clothing and wash skin oroughly with soap and water.

#### INHALATION:

Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxugen if available. If overexposure to oil mist, remove from further exposure until excessive oil mist condition subsides.

#### INGESTION:

If ingested, do not induce vomiting. Call a physician immediately.

#### FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT (MINIMUM):

AUTOIGNITION TEMPERATURE:

160'C (320'F) Test method: COC

NZE

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:

Health 1

Flammability Reactivity 1

8

Basis Recommended by Exxon

FLAMMABLE OR EXPLOSIVE LIMITS (approximate percent by volume in air): Estimated values: lower 1% Upper 6%

TINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES:

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.

The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):

Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water froth may be used to flush spills away from exposure. Minimize breathing gases, vapor, fumes, or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.

UNUSUAL FIRE AND EXPLOSION HAZARDS: אלת

#### "EMPTY" CONTAINER WARNING:

Empty containers retain residue (liquid or vapor) and can be dangerous. 00 NOT PRESSURIZE, HELD, CUT BRAZE, SOLDER, DRILL, CRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY FYPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is ficult to remove. "Empty" dryms should be completely drained, properly bunged, and returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. For work on tanks refer to Occupational Safety and

#### FIRE AND EXPLOSION HAZARD INFORMATION

Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other intemplated operations.

#### HEALTH AND HAZARD INFORMATION

EXPOSURE LIMIT FOR TOTAL PRODUCT:

BASIS:

5 ma/cubic meter for oil mist in air

OSHA Regulation 29 CFR 1910, 1000

VARIABILITY AMONG INDIVIDUALS:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria. Product contacting the eye may cause irritation.

Product has a low order of oral and dermal toxicity. Possible aspiration hazard. Induced vomiting may cause aspiration of product into the lungs. (See Emergency First Aid Section).

#### PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

**BOILING RANGE:** 

Wide range

VAPOR PRESSURE:

< 8.1 @ 38'C/100'F

SPECIFIC GRAUITY (25°C/25°C):

(WATER # 1)

< 1. Ø

UAPOR DENSITY (AIR = 1):

> B

MOLECULAR WEIGHT:

Mide range

PERCENT VOLATILE BY VOLUME:

Negligible

EUAPORATION RATE @ 1 ATM. AND 25'C

ECHPORALIUM KAI

(77'F) (n-BUTYL ACETATE # 1):

< 1.0

SOLUBILITY IN WATER @ I ATM. and 25°C

(77'F):

Negligible

POUR, CONGEALING OR MELTING POINT:

n/=

FREEZING POINT:

カノモ

#### REACTIVITY

This product is stable and will NOT react violently with water. Hazardous alymerization will not occur. Avoid contact with strong exidents such as equid chlorine, concentrated exygen, sodium hypochlorite or calcium hypochlorite.

#### REACTIVITY

#### DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:

mes, smoke, carbon monoxide and other decomposition products, in case of incomplete combustion.

CONDITIONS TO AUDID:

Open flames.

# TOXICITY ORAL (Acute) LD 50 > 5 g/kg (total body weight) DERMAL (Acute) LD 50 > 3.16 g/kg (total body weight) EYE N/E INHALATION (Acute) CHRONIC, SUBCHRONIC, ETC. N/E

Medical Conditions Aggravated by Exposure: Unknown

This product does NOT contain any ingredients identified as carcinogenic by IRAC, NTP, or OSHA.

SARA Section 313 Status:

This material is not known to contain any chemicals on the SARA Section 313 list at a concentration greater than 1.0 percent or carcinogenic chemical on that list at a concentration greater than 0.1 percent.

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Keep product out of sewers and watercourses by diking or impounding. Absorb with sand or inert material. Sweep or scoop up and remove. Prevent spread of spill. Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas. Assure conformity with local regulations

WASTE DISPOSAL METHOD: (Consult federal, state, or local authorities for proper disposal procedures.)

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste site or facility.

#### PROTECTION AND PRECAUTIONS

VENTILATION: (Always maintain below permissible exposure limits.)
Use local exhaust to capture vapor, mist or fumes, if necessary. Provide greater than 60 feet per minute hood face velocity for confined spaces. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air.

RESPIRATORY PROTECTION: (Use only NIOSH approved equipment.)
Normally not needed at ambient temperatures. Use supplied air respiratory
protection in confined or enclosed spaces, if needed. Use filter, dust, fume,
mist respirator type under misting conditions. Use can or cartridge; gas
or vapor respirator type under conditions exceeding THA standard.

#### PROTECTION AND PRECAUTIONS

#### "POTECTIVE GLOVES:

a chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

#### EYE PROTECTION:

Use splash goggles or face shield when eye contact may occur.

#### OTHER PROTECTIVE EQUIPMENT:

Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

#### HORK PRACTICES/ENGINEERING CONTROLS:

Keep containers closed when not in use. Do not handle near heat, sparks, flame, or strong exidents.

#### PERSONAL HYGIENE:

Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

TEPARED BY: Dave Townsend Product Safety Manager

THE ABOUE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, SELLER MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

#### MATERIAL SAFETY DATA SHEET

#### COOK'S INDUSTRIAL LUBRICANTS 5 NORTH STILES STREET LINDEN, N. J. 07036

REVISION DATE 23-MAY-90

DATE ISSUED 23-MAY-90

IDENTIFICATION AND EMERGENCY INFORMATION

RANG CONTEN FRONCETO LENGAN. KODO MUNTEN CITTO D-0397

COCK'S PRODUCT NAME:

COOK'S PRODUCT #: A2A912A

COOK'S DRAW 1575-27

CHEMICAL NAME:

CAS #'S:

Mixture of Petroleum Soap-based

Mixture

Grease and Graphite

PRODUCT APPEARANCE AND ODOR:

CHEMICAL FAMILY:

Black Gel, petroleum odor

Petroleum hudrocarbon

EMERGENCY TELEPHONE:

Febroleum-based Grease

(201) 862-2500

COMPONENTS AND HAZARD IMFORMATION

COMPONENTS:

SYNONYMS:

W/W HAZARD DATA (TLV, LD50, LC50, ETC. ):

Asphalt

CAS # 8052-42-4

20-25

TLU 5 mg./meter cubed

(as a mist)

Petroleum-based lubricating oil TLV 5 mg./meter cubed

CAS #'S 64742-53-6 or 64742-52-5

20-25

(as an oil mist)

Calcium Oleate

CAS # 142-17-6

Graphite

CAS # 7782-42-5

TLU 15 MPPCF

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health 1

Flammability 1

Reactivity

8

Recommended by Exxon

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

ICC: Compound or lubricant. Metal cutting, drawing or drilling.

Dry, liquid or paste. NOI

EMERGENCY FIRST AID

EYE CONTACT:

If splashed into the eyes, flush with clear water for 15 minutes or until

#### EMERGENCY FIRST AID

If irritation persists, call a physician. irritation subsides.

#### SKIN CONTACT:

In case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.

#### INHALATION:

Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen if available. If overexposur to oil mist, remove from further exposure until excessive oil mist condition subsides.

#### INGESTION:

If ingested, do not induce vomiting. Call a physician immediately.

#### FIRE AND EXPLOSION HAZARD INFORMATION

FLASH FOINT (MINIMUM):

AUTOIGNITION TEMPERATURE:

160°C (320°F) Test method: COC

NZE

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:

Health 1

Flammability Reactivity

Basis Recommended by Exxon

FLAMMABLE OR EXPLOSIVE LIMITS (approximate percent by volume in air): Estimated values: lower 1% upper 6%

#### EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES:

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involv: this type product, depending on size or potential size of fire and circumster related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialist

The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protectic Guide on Hazardous Materials". Eighth Edition (1984):

Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may ca frothing. Use water to keep fire-exposed containers cool. Water froth may be used to flush spills away from exposure. Minimize breathing gases, vapor, fumes, or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.

UNUSUAL FIRE AND EXPLOSION HAZARDS: n/a

#### "EMPTY" CONTAINER WARNING:

Empty containers retain residue (liquid or vapor) and can be dangerous. DO NOT PRESSURIZE, WELD, CUT BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged, and returned to a drum reconditioner. All other containers should b

#### FIRE AND EXPLOSION HAZARD INFORMATION

disposed of in an environmentally safe manner and in accordance with government regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

#### HEALTH AND HAZARD INFORMATION

EXPOSURE LIMIT FOR TOTAL PRODUCT:

BASIS:

5 mg/cubic meter for oil mist in air

OSHA Regulation 29 CFR 1910.100

VARIABILITY AMONG INDIVIDUALS:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes show be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure):

Prolonged or repeated skin contact with this product tends to remove skin o possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria. Product contactin the eye may cause irritation.

Product has a low order of oral and dermal toxicity. Possible aspiration hazard. Induced vomiting may cause aspiration of product into the lungs. (See Emergency First Aid Section).

#### PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

BOILING RANGE:

Wide range

VAPOR PRESSURE:

< 0.1 @ 38'C/100'F

SPECIFIC GRAVITY (25°C/25°C):

(WATER = 1)

< 1.0

VAPOR DENSITY (AIR = 1):

> 8

MOLECULAR WEIGHT:

Wide range

PERCENT VOLATILE BY VOLUME:

Negligible

EVAPORATION RATE @ 1 ATM. AND 25'C

(77'F) (n-BUTYL ACETATE = 1):

< 1.0

SOLUBILITY IN WATER @ 1 ATM. and 25

(77'F): Negligible

POUR, CONGEALING OR MELTING POINT:

FREEZING POINT:

n/e

n/e

#### REACTIVITY

This product is stable and will NOT react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as

#### REACTIVITY

liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:

Fumes, smoke, carbon monoxide and other decomposition products, in case of incomplete combustion.

CONDITIONS TO AVOID:

Open flames.

|                           | TOXICITY                              |
|---------------------------|---------------------------------------|
| ORAL (Acute)              | LD 50 > 5 g/kg (total body weight)    |
| DERMAL (Acute)            | LD 50 > 3.16 g/kg (total body weight) |
| EYE                       | N/E                                   |
| INHALATION (Acute)        | N/E                                   |
| CHRONIC, SUBCHRONIC, ETC. | N/E                                   |

Medical Conditions Aggravated by Exposure: Unknown

This product does NOT contain any ingredients identified as carcinogenic by IRAC, NTP, or OSHA.

SARA Section 313 Status:

This material is not known to contain any chemicals on the SARA Section 313 list at a concentration greater than 1.0 percent or carcinogenic chemical on that list at a concentration greater than 0.1 percent.

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Keep product out of sewers and watercourses by diking or impounding. Absorb with sand or inert material. Sweep or scoop up and remove. Prevent spread of spill. Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas. Assure conformity with local regulati

WASTE DISPOSAL METHOD: (Consult federal, state, or local authorities for proper disposal procedures.)

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste site or facility.

#### PROTECTION AND PRECAUTIONS

VENTILATION: (Always maintain below permissible exposure limits.)
Use local exhaust to capture vapor, mist or fumes, if necessary. Provide greater than 60 feet per minute hood face velocity for confined spaces. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air.

RESPIRATORY PROTECTION: (Use only NIOSH approved equipment.)
Normally not needed at ambient temperatures. Use supplied air respiratory
protection in confined or enclosed spaces, if needed. Use filter, dust, fum

#### PROTECTION AND FRECAUTIONS

or mist respirator type under misting conditions. Use can or cartridge; gas or vapor respirator type under conditions exceeding TWA standard.

#### PROTECTIVE GLOVES:

Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skill contact.

#### EYE PROTECTION:

Use splash goggles or face shield when eye contact may occur.

#### OTHER PROTECTIVE EQUIPMENT:

Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

#### WORK PRACTICES/ENGINEERING CONTROLS:

Keep containers closed when not in use. Do not handle near heat, sparks, floor strong exidents.

#### PERSONAL HYGIENE:

Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless has cleaners followed by washing thoroughly with soap and water.

PREPARED BY: Dave Younsend Product Safety Manager

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CEXTER WATER MANAGEMENT SYSTEMS DIVISION THE DEXTER CORPORATION F.C. BOX 400

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0308

THAGRIN FALLS. CH 44022

,216) 247-5000

FOR SALES OFFICE OR PRODUCT LITERATURE CALL (600) 669-0053

FOR MEDICAL EMERGENCY: CALL COLLECT (216) 835-7233

MATERIAL SAFETY DATA SHEET

PAGE 1 OF 4

SECTION I: PRODUCT IDENTIFICATION

579

TRADE NAME: MOGUL 50232

CHEMICAL NAME: DIETHYLDITHICCARBAMATE

CHEMICAL FAMILY: WATER CLARIFYING TREATMENT

SECTION II: HAZARDOUS INGREDIENTS

CAS # TLV/PEL

SODIUM DIMETHYLDITHIOCARDAMATE 306 128-04-1 35-45 NOT EST.

SECTION III: PHYSICAL DATA

EDILING POINT (F): SPECIFIC GRAVITY: >212 1.13

VAPCR PRESSURE (MM HG): NA PERCENT VOLATILE BY VOLUME:

VAPOR DENSITY (AIR=1): EVAP. RATE (WATER=1): LIKE WATER

SOLUBILITY IN WATER: COMPLETE PH: 11.0 - 13.0

9.3 LUS/GAL PH (1% SOLN.): 9.0 -10.0 CENSITY:

APPEARANCE AND ODCR: YELLOW-GREEN SOLUTION. SLIGHT SULFIDE COOR.

SECTION IV: FIRE PROTECTION INFORMATION

>200 F PENSKY-MARTENS FLASH POINT:

FLAMMABLE LIMITS: NA

EXTINGUISHING MEDIA: WATER. CARDON DIOXIDE: DRY CHEMICAL OR FCAM.

SPECIAL FIRE FIGHTING PRICEDURES: KEEP DRUMS THAT ARE EXPOSED TO FIRE COOL #: WATER. WEAR PROTECTIVE CLOTHING AND SCHA-

UNUSUAL FIRE AND EXPLOSION HAZARDS: MAY RELEASE TOXIC GASES ON DECEMPOSITION.

NATIONAL FIRE PROTECTION ASSOCIATION (NEPA) RATING (IN FIRE CONVITIONS): FIRE: 0 REACTIVITY: 0 SPECIAL:

HAZARD RATING: 4=EXTREME B=HIGH 2=MODERATE 1=SLIGHT 0=INSIGNIFICANT

ATE: 1/90

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PAGE 3 OF 4 MDGUL 50232

ECTION VI: REACTIVITY DATA

A : CO I PER INDITABLE PROPERTY AUGURANAME I NO. A

CONDITIONS TO AVOID:

ACIDIFICATION RELEASES FLAMMABLE GASES.

MATERIALS TO AVOID:

MINERAL ACIDS SUCH AS SULFURIC. NITRIC. AND HYDROCHLORIC. OR GXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:

THERNAL DECOMPOSITION MAY PRODUCE CARBON MUNDXIDE. CARBON DIDXIDE AND/OR NITROGEN UXIDES AS WELL AS AMINES AND CARBON DISULFIDE. DIMETHYLNITROSAMINES MAY BE PRODUCED ON CONTACT WITH A COMBINATION OF STRONG ACIDS AND NITROSATING COMPOUNDS.

SECTION VII: SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

SPILL OR LEAK PROCEDURES:

CONTAIN SPILL IF WITHOUT RISK. ABSORD SPILL ON INERT MATERIAL AND PLACE IN CRUMS FOR PROPER DISPOSAL. DO NOT DISCHARGE TO OPEN WATERS. USE CAUTION IN LEAN-UP AS THE FLOOR WILL BE SLIPPERY.

MASTE DISPOSAL:

NOT A RORA HAZARDOUS WASTE IF THE PH IS WITHIN THE RANGE OF 2.1-12.4 AT THE TIME OF DISPOSAL. DISPOSE OF IN ACCORDANCE WITH LOCAL. STATE AND FEDERAL REQUIREMENTS.

ADDITIONAL REGULATORY INFORMATION:

CERCLA:

SARA TITLE III:

- SEC. 313 TOXIC CHEMICAL RELEASE THIS PRODUCT DOES NOT CONTAIN INGREDIENTS (AT 1% OR GREATER) WHICH ARE ON THE TOXIC CHEMICAL LIST.
- SEC. 302-304 EXTREMELY HAZARDOUS SUBSTANCES THIS PRODUCT DOES NOT CONTAIN INGREDIENTS ON THE EXTREMELY HAZARDOUS SUBSTANCE LIST.
- SEC. 311-312 INVENTURY REPORTING. HAZARD CATEGORY IMMEDIATE (ACUTE)

CALIFORNIA PROPOSITION 65: THIS PRODUCT DOES NOT CONTAIN INGREDIENTS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY.

LATE: 1/90

FAGE 4 OF 4 MCGUL 50232

SECTION VIII: CCCUPATIONAL PROTECTIVE EQUIPMENT

TYE: CHEMICAL SAFETY GLASSES OR FACE SHIELD.

RESPIRATORY: NOT REGULAED IN ADEQUATE VENTILATION IS PROVIDED. OTHERWISE.

WEAR A SCHA.

SKIN: RUSSER OR IMPERVIOUS GLOVES.

LOCAL EXHAUST: RECOMMENDED IN CONFINED SPACES. MECHANICAL EXHAUST VENTILATION

SUFFICIENT TO REMOVE AIR CONTAMINANTS FROM OPERATOR'S AREA.

CTHER: RUDDER APRON IF SPLASHING LIKELY. EYE WASH AND EMERGENCY SHOWER

EQUIPMENT.

SECTION IX: PRECAUTIONARY MEASURES

AVOID SKIN AND EYE CONTACT. DO NOT TAKE INTERNALLY. KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID BREATHING VAPORS OR MISTS. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING. DRINKING. OR SMOKING.

REFER TO THE "MOGUL MATERIAL SAFETY DATA SHEET GLUSSARY OF TERMS" FOR ADDITIONAL INFORMATION.

SECTION A: TRANSPORTATION INFORMATION

DOT LABEL: NA

LOT PROPER SHIPPING NAME: NA

DOT HAZARD CLASS/I.D. #: NA

L.S. SURFACE FREIGHT CLASSIFICATION: CCMPCUNDS, WATER CLARIFYING.

LIGUID

SECTION XI: ADDITIONAL INFORMATION

FDA: NONE

USDA: NONE

EPA: ALL INGREDIENTS REPORTED ON TSCA INVENTORY.

AGUATIC TOXICITY: NOT TESTED

CATE: 1/90

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BEATER WATER MANAGEMENT SYSTEMS DIVISION THE DEXTER CORPORATION P.O. 60x 200 CHAGRIN FALLS. SH 44022 (216) 247-5000 FOR SALES OFFICE OR PRODUCT LITERATURE CALL (600) 669-8053

TALE (800) 009-0093

(216) 836-1233

OR MEDICAL EMERGENCY. CALL COLLECT

EV 13 IVMENTAL: 20101 PAGE 1 UF 4 SAFETA: 20101 PAGE 1 UF 4 SAFETA: 20101 PAGE 1 UF 4 PAGE

SECTION I: PRODUCT IDENTIFICATION

PART # 1347

TRADE NAME: MUGULAS HARDNESS U CHEMICAL NAME: LIQUID MIXTURE/TESTING REAGENT CHEMICAL FAMILY: NA

SECTION II: HAZARDOUS INGREDIENTS

CAS # % TLV

NOT A HAZARDOUS MATERIAL AS DEFINED IN 23 CFR 1910.12

SECTION III: PHYSICAL DATA

EDILING POINT (F): LIKE WATER SPECIFIC GRAVITY: 1.0

VAPOR PRESSURE (MM HG): LIKE WATER PERCENT VOLATILE BY VOLUME: 99

APOR DENSITY (AIR=1): LIKE WATER EVAP. RATE (WATER=1): LIKE WATER

SOLUBILITY IN WATER: COMPLETE PH: 11.3

GENSITY: LIKE WATER PH (1% SCLN.): NA

APPEARANCE AND ODOR: CLEAR LIQUID. NO ODOR.

SECTION IV: FIRE PROTECTION INFORMATION

FLASH POINT: NA FLAMMABLE LIMITS: NA EXTINGUISHING MEDIA: WATER. CARBON DICXIDE, DRY CHEMICAL OR FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: WEAR PROTECTIVE CLOTHING AND SCHA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATING (IN FIRE CONDITIONS):
TOXICITY: 1 FIRE: 0 REACTIVITY: 0 SPECIAL:

MAZARD RATING: 4=EXTREME 3=MIGH 2=MODERATE 1=SLIGHT 0=INSIGNIFICANT

CATE: 8/83

SECTION V: HEALTH HAZARD INFORMATION

RIMARY POUTE(S) OF ENTRY:

SKIN: X EYE: X INHALATION: X INGESTION: X

ACUTE EFFECTS OF EXPOSURE: MAY IMPLIATE SKIN. EYES AND MUCCUS MEMERANES WITH FROLENGED CONTACT.

CHRONIC EFFECTS OF EXPOSURE: NO KNOWN CHRONIC HEALTH EFFECTS. NOT A KNOWN OR SUSPECTED CARCINGGEN. (REFERENCE NTP. IARC. OSHA)

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY HANDLING THIS PRODUCT: PERSONS WITH IMPAIRED BHEATHING MAY BE AT INCREASED RISK IF CONCENTRATED MISTS ARE INHALED. OPEN WOUNDS. RASHES OR SORES MAY BE IRRITATED.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN: FLUSH WITH WATER. THEN WASH THOROUGHLY WITH SDAP AND WATER.

EYES: FLUSH WITH WATER FOR 15 MINUTES AND SEEK MEDICAL ATTENTION IF IRRITATION PERSISTS.

INGESTION: DRINK PLENTY OF WATER AND CALL COLLECT (216)835-7233 OR CONSULT PHYSICIAN IMMEDIATELY. AVOID ALCOHOLIC BEVERAGES. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: MOVE VICTIM TO FRESH AIR. SEEK MEDICAL ATTENTION IF BREATHING OFFICULTY PERSISTS. APPLY ARTIFICIAL RESPIRATION IF NECESSARY.

FOR 24 HOUR EMERGENCY MEDICAL INFORMATION CALL COLLECT (216)835-7233 (TEL-SAFE,

FOR ADDITIONAL NON-EMERGENCY INFORMATION CALL: SAFETY

SAFETY AND REGULATORY DEPT.

DEXTER WATER MANAGEMENT SYSTEMS

P.C. BOX 200

CHAGRIN FALLS. DH 44022

(215) 247-5000

DATE: 6/65

PAGE 3 CH 4 HARDNESS J

TECTION VI: HEACTIVITY DATA

STABLE: YES: X NO: HAZARDOUS POLYMERIZATION: YES: NO: X

CONDITIONS TO AVOID: NONE KNOWN.

MATERIALS TO AVOID: NONE KNOWN.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE KNOWN.

SECTION VII: SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

SPILL OR LEAK PROCEDURES: WIPE UP SPILL AND FLUSH AREA WITH WATER. IF SPILL IS EXCESSIVE. DILUTE WITH WATER AND WIPE UP.

WASTE DISPUSAL: FLUSH SMALL QUANTITIES OF MATERIAL TO SANITARY SEWER WITH EXCESS WATER IF IN ACCORDANCE WITH LOCAL. STATE AND FEDERAL REGULATIONS.

DOITIONAL REGULATORY INFORMATION:

CERCLA:

SARA TITLE III:

SEC. 313 TOXIC CHEMICAL RELEASE - THIS PRODUCT DOES NOT CONTAIN ANY INGREDIENTS AT 1% OR GREATER THAT ARE ON THE LIST OF TOXIC CHEMICALS. SEC. 302-304 EXTREMELY HAZARDOUS SUBSTANCES - THIS PRODUCT DOES NOT CONTAIN ANY INGREDIENTS ON THE EXTREMELY HAZARDOUS SUBSTANCE LIST. SEC. 311-312 INVENTORY REPORTING. HAZARD CATEGORY - IMMEDIATE (ACUTE)

CALIFORNIA PROPOSITION 55: THIS PRODUCT COES NOT CONTAIN ANY INGREDIENTS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY.

CATE: 5/dd

PAGE 4 OF 4 HARDNESS J

SECTION VIII: CCCUPATIONAL PROTECTIVE EQUIPMENT

YE: CHEMICAL SAFETY BLABBES OF FACE SHIELD.

RESPIRATORY: NOT REGULAZO UNDZA NORMAL CONDITIONS OF USE.

SKIN: RUSBER OF IMPERVIOUS GLOVES.

LOCAL EXHAUST: NONE REGULTRED

CTHER: RUDGER APRON IF SPLASHING LIKELY. EYE WASH AND EMERGENCY SHOWER

EQUIPMENT.

SECTION IX: PRECAUTIONARY MEASURES AVOID SKIN AND EYE CONTACT. DO NOT TAKE INTERNALLY. KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID BREATHING VAPORS OR MISTS. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING.

REFER TO THE "MCGUL MATERIAL SAFETY DATA SHEET GLOSSARY OF TERMS" FOR ADDITIONAL INFORMATION.

SECTION X: TRANSPORTATION INFORMATION

DOT LABEL: NA

DOT PROPER SHIPPING NAME: NA

TT HAZARD CLASS/I.D. #: NA

U.S. SURFACE FREIGHT CLASSIFICATION: NA

SECTION XI: ADDITIONAL INFORMATION

FDA: NONE

USDA: NONE

EPA: ALL INGRECIENTS REPORTED ON TSCA INVENTORY.

AQUATIC TUXICITY: NOT TESTED

CATE: 8/38

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CEXTER WATER MANAGEMENT SYSTEMS DIVISION THE DEXTER CORPORATION P.O. BOX 200 CHAGRIN FALLS. OH 44022 (216) 247-5000 FOR SALES OFFICE OR PRODUCT LITERATURE CALL (800) 669-0053

JR MEDICAL EMERGENCY. CALL COLLECT (216) 835-7233

FAGE 1 OF 4

SECTION I: PRODUCT IDENTIFICATION

DEFRO COFFER PRODUCTS COMPANY MBDS NUMBER - COFE-80-0313 

A 10

MOGULAB NEUTRALIZING SOLUTION CHEMICAL NAME: LIQUID TRADE NAME: MIXTURE/TESTING REAGENT CHEMICAL FAMILY:

SECTION II: HAZARDOUS INGREDIENTS

CAS # x TLV 67-63-0 ISOPROPYL ALCOHOL **65-**95 400PPM 69-72-7 5-10 SALICYLIC ACID NOT EST.

SECTION III: PHYSICAL DATA

SPECIFIC GRAVITY: editing point (F): UNKNOWN 0.81

VAPOR PRESSURE (MM HG): UNKNOWN PERCENT VOLATILE BY VOLUME: >90

EVAP. RATE (WATER=1): UNKNOWN VAPOR DENSITY (AIR=1): UNKNOWN

SOLUBILITY IN WATER: COMPLETE PH: UNKNOWN

CENSITY: UNKNOWN PH (1% SOLN.): 2.6

APPEARANCE AND GDOR: CLEAR LIQUID. ALCOHOL ODOR.

SECTION IV: FIRE PROTECTION INFORMATION

FLASH POINT: 77 F CLOSED CUP FLAMMABLE LIMITS: UNKNOWN EXTINGUISHING MEDIA: WATER CARBON DIDXIDE DRY CHEMICAL OR FCAM.

SPECIAL FIRE FIGHTING PROCEDURES: WEAR PROTECTIVE CLOTHING AND SCHA.

UNUSUAL FIRE AND EXPLOSION HAZARDS: CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRE OR EXPLOSION.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATING (IN FIRE CONDITIONS): TOXICITY: 1 FIRE: 3 REACTIVITY: 0 SFECTAL:

HAZARD RATING: 4=EXTREME 3=HIGH 2=MODERATE 1=SLIGHT 0=INSIGNIFICANT

ATE: 9/88 SECTION V: HEALTH HAZARD INFORMATION

RIMARY ROUTE(S) OF ENTRY:

SKIN: X EYE: X INHALATION: X INGESTION: X

ACUTE EFFECTS OF EXPOSURE: INHALATION MAY CAUSE IRRITATION OF THE NOSE AND THROAT. EXPOSURE TO HIGH CONCENTRATIONS HAS A NARCOTIC EFFECT. PRODUCING SYMPTOMS OF DROWSINESS. HEADACHE. STAGGERING. UNCONSCIOUSNESS AND POSSIBLY DEATH. INGESTION MAY CAUSE GASTROINTESTINAL PAIN. CRAMPS. NAUSEA. VOMITING AND CIARRHEA. MAY CAUSE SKIN AND EYE IRRITATION WITH POSSIBLE CORNEAL BURNS AND EYE DAMAGE.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED CONTACT MAY CAUSE DERMATITIS. CENTRAL NERVOUS SYSTEM DISTURBANCES SUCH AS RAPID BREATHING. CONFUSION AND EVEN CONVULSIONS MAY DEVELOP. NOT A SUSPECTED OR CONFIRMED CARCINOGEN. (REFERENCE TO OSHA. NTP. IARC)

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY HANDLING THIS PRODUCT: PERSONS WITH IMPAIRED BREATHING MAY BE AT INCREASED RISK IF CONCENTRATED MISTS ARE INHALED. OPEN WOUNDS. RASHES OR SORES MAY BE IRRITATED.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN: FLUSH WITH WATER. THEN WASH THOROUGHLY WITH SOAP AND WATER.

EYES: FLUSH WITH WATER FOR 15 MINUTES AND SEEK MEDICAL ATTENTION IF IRRITATION PERSISTS.

INGESTION: DRINK PLENTY OF WATER AND CALL COLLECT (216)835-7233 OR CONSULT PHYSICIAN IMMEDIATELY. AVOID ALCOHOLIC BEVERAGES. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: MOVE VICTIM TO FRESH AIR. SEEK MEDICAL ATTENTION IF BREATHING DIFFICULTY PERSISTS. APPLY ARTIFICIAL RESPIRATION IF NECESSARY.

FOR 24 HOUR EMERGENCY MEDICAL INFORMATION CALL COLLECT (216)835-7233 (TEL-SAFE)

FOR ADDITIONAL NON-EMERGENCY INFORMATION CALL:

SAFETY AND REGULATORY DEPT.

DEXTER WATER MANAGEMENT SYSTEMS

P.C. BOX 200

CHAGRIN FALLS. DH 44022 12161 247 5000

CATE: 9/88

"SCTION VI: REACTIVITY DATA

STABLE: YES: X NC: HAZARDOUS POLYMERIZATION: YES: NO: X

CONDITIONS TO AVOID: HEAT.

MATERIALS TO AVCID: STRONG OXIDIZERS. ACIDS AND CHLCRINE.

HAZAROOUS DECOMPOSITION PRODUCTS: THERMAL DECOMPOSITION MAY PRODUCE CARBON PONCXIDE AND CARBON DIOXIDE.

SECTION VII: SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

SPILL OR LEAK PROCEDURES: ELIMINATE SOURCES OF IGNITION. WIPE UP SMALL SPILLS AND FLUSH AREA DOWN WITH WATER.

WASTE DISPOSAL: THIS MATERIAL IS CONSIDERED A RCRA HAZARDOUS WASTE DUE TO THE CHARACTERISTIC OF IGNITABILITY. SMALL AMOUNTS MAY BE DISPOSED OF BY EVAPORATION IN A SUITABLY VENTILATED AREA FREE OF IGNITION SOURCES. LARGER AMOUNTS SHOULD BE DISPOSED OF BY A RCRA APPROVED FACILITY BY INCINERATION. ISURE COMPLIANCE WITH LOCAL. STATE AND FEDERAL REQUIREMENTS.

ADDITIONAL REGULATORY INFORMATION:

CERCLA:

SARA TITLE III:

SEC. 313 TOXIC CHEMICAL RELEASE - THIS PRODUCT DOES NOT CONTAIN INGREDIENTS (AT LEVELS OF 1% OR GREATER) ON THE LIST OF TOXIC CHEMICALS. SEC. 302-304

EXTREMELY HAZARDOUS SUBSTANCES - THIS PRODUCT DOES NOT CONTAIN ANY INGREDIENTS ON THE EXTREMELY HAZARDOUS SUBSTANCE LIST. SEC. 311-312

INVENTORY REPORTING. HAZARD CATEGORY - IMMEDIATE (ACUTE) AND DELAYED (CHRONIC).

CALIFORNIA PROPOSITION 65: THIS PRODUCT DOES NOT CONTAIN INGREDIENTS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY.

CATE: 9/85

PAGE 4 OF 4 MOGULAB NEUTRALIZING SOLUTION

YE: CHEMICAL SAFETY GLASSES OR FACE SHIELD.

RESPIRATORY: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

SKIN: RUBBER OR IMPERVIOUS GLOVES.

SECTION VIII: OCCUPATIONAL PROTECTIVE EQUIPMENT

LOCAL EXHAUST: NONE REQUIRED

CTHER: RUBBER APRON IF SPLASHING LIKELY. EYE WASH AND EMERGENCY SHOWER

EQUIPMENT.

SECTION IX: PRECAUTIONARY MEASURES AVOID SKIN AND EYE CONTACT. DO NOT TAKE INTERNALLY. KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID BREATHING VAPORS OR WISTS. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING. DRINKING. OR SMCKING.

REFER TO THE "MOGUL MATERIAL SAFETY DATA SHEET GLOSSARY OF TERMS" FOR ADDITIONAL INFORMATION.

SECTION X: TRANSPORTATION INFORMATION

COT LABEL: FLAMMABLE LIQUID

DOT PROPER SHIPPING NAME: ALCOHOL. N.D.S.

OT HAZARD CLASS/I.D. #: FLAMMABLE LIQUID/UN 1987

U.S. SURFACE FREIGHT CLASSIFICATION: NA

SECTION XI: ADDITIONAL INFORMATION

FDA: NONE

USDA: NONE

EPA: ALL INGRECIENTS REPORTED ON TSCA INVENTORY.

AQUATIC TOXICITY: NOT TESTED

**CATE:** 9/88

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Olle W/ J. D. N. W.

# DU PONT

#### MATERIAL SAFETY DATA SHEET

#### **IDENTIFICATION**

NAME

Hydrogen Peroxide (30 to 52%)

GRADE

Albone\* 35, 50, 35 CG, 50 CG, 50 M; Kastone\* Kastone\* B; Perone\* 30 EG, 35, 50;

Tysul\* 50S, WW35, WW50

**SYNONYMS** 

Peroxide

CAS NAME

Hydrogen Peroxide

I.D. NOS./CODES

NIOSH Registry No: MX 0900000

MANUFACTURER/DISTRIBUTOR

E. I. du Pont de Nemours & Co. (Inc.)

**ADDRESS** 

Wilmington, DE 19898

CHEMICAL FAMILY

Inorganic Peroxide

FORMULA

 $H_2O_2$ 

CAS REGISTRY NO.

7722-84-1

TSCA INVENTORY STATUS

Reported/Included

PRODUCT INFORMATION PHONE

(800) 441-9442

MEDICAL EMERGENCY PHONE

(800) 441-3637

TRANSPORTATION EMERGENCY PHONE

CHEMTREC (800) 424-9300

#### PHYSICAL DATA

BOILING POINT, 760 mmHg

106 to 114°C (222 to 237°F)

(See page 2 for specific grades)

SPECIFIC GRAVITY

1.1 to 1.2 (See page 2)

**VAPOR DENSITY** 

0.8 to 1.0 (calculated)

pH INFORMATION

Apparent pH = 3.3 at

30% to 1.8 at 50%

**FORM** 

Liquid

MELTING POINT

-26 to -52°C (-15 to -62°F)

VAPOR PRESSURE

18 to 25 mmHg at 30°C (86°F)

(See page 2)

SOLUBILITY IN WATER

100%

**EVAPORATION RATE (BUTYL ACETATE=1)** 

>1

**APPEARANCE** 

Clear

\*Reg. U.S. Pat. & Tm. Off., Du Pont Company. Albone<sup>(R)</sup>, Kastone<sup>(R)</sup>, Perone<sup>(R)</sup>, and Tysul<sup>(R)</sup> Hydrogen Peroxide are made only by Du Pont.

E-91988

Date: 3/87

### COLOR

Colorless

#### ODOR

Slightly pungent, irritating

|                                    | HYDROGEN PEROXIDE CONCENTRATION |            |                    |            |  |
|------------------------------------|---------------------------------|------------|--------------------|------------|--|
|                                    | <u>30%</u>                      | 35%        | <u>40%</u>         | <u>50%</u> |  |
| Boiling Point - 760 mmHg, °C °F    | 106<br>222                      | 108<br>226 | 109<br>22 <b>8</b> | 114<br>237 |  |
| Melting Point - °C °F              | -26<br>-15                      | -33<br>-27 |                    | -52<br>-62 |  |
| Specific Gravity - 20°C (68°F)     | 1.112                           | 1.133      | 1.17               | 1.196      |  |
| Vapor Pressure - 30°C (86°F), mmHg | 25                              | 23         | 22                 | 18         |  |

#### **HAZARDOUS COMPONENTS**

#### MATERIAL(S)

#### APPROXIMATE %

| Hydrogen Peroxide (CAS no. 7722-84-1) | 30 (Perone <sup>(R)</sup> 30 EG)                               |
|---------------------------------------|----------------------------------------------------------------|
| Hydrogen Peroxide                     | 35 (Albone <sup>(R)</sup> 35, 35 CG; Perone <sup>(R)</sup> 35; |
|                                       | Tysul <sup>(R)</sup> WW35)                                     |
| Hydrogen Peroxide                     | 40 (Kastone <sup>(R)</sup> )                                   |
| Hydrogen Peroxide                     | 50 (Albone <sup>(R)</sup> 50, 50CG, 50M;                       |
|                                       | Kastone <sup>(R)</sup> B; Perone <sup>(R)</sup> 50;            |
|                                       | Tysul <sup>(R)</sup> 50S, WW50)                                |

#### **NONHAZARDOUS COMPONENTS**

Water (CAS No. 7732-18-5)

50-70%

#### **HAZARDOUS REACTIVITY**

#### INSTABILITY

Unstable with heat or contamination; liberation of oxygen gas may result in dangerous pressures. (See "Decomposition," below).

#### **INCOMPATIBILITY**

Incompatible with cyanides, hexavalent chromium compounds, nitric acid, potassium permanganate, many other oxidizing and reducing agents, and many flammables (see "Fire and Explosion Hazards").

#### **DECOMPOSITION**

Contamination from any source may cause rapid decomposition, oxygen gas release, and dangerous pressures. May react dangerously with rust, dust, dirt, iron, copper, heavy metals or their salts (such as mercuric oxide or chloride), alkalis, and with organic materials (especially vinyl monomers).

#### **POLYMERIZATION**

Will not occur.

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#### **CARCINOGENICITY**

Not listed as a carcinogen by IARC, NTP, OSHA, ACGIH, or Du Pont.

EXPOSURE LIMITS [PEL (OSHA), TLV (ACGIH), AEL (DU PONT), ETC.]

The OSHA 8-hour Time Weighted Average (TWA) and ACGIH TLV<sup>(R)</sup>-TWA are 1 ppm, 1.4 mg/m<sup>3</sup>.

#### SAFETY PRECAUTIONS

Use extreme care when attempting any reactions because of fire and explosion potential (immediate or delayed). Conduct all initial experiments on a small scale and protect personnel with adequate shielding as the reactions are unpredictable, being affected by impurities, contaminants, etc. Do not get in eyes. Avoid contact with skin and clothing. Avoid contact with flammable or combustible materials. Avoid contamination from any source including metals, dust, and organic materials. Never use pressure to empty drums—container is not a pressure vessel. Wash thoroughly after handling.

#### FIRST AID

In case of eye contact; Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

In case of skin contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing and shoes promptly and thoroughly.

<u>If inhaled</u>: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

If swallowed: Do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

#### NOTE TO PHYSICIAN

If swallowed, large amounts of oxygen may be released quickly. The distention of the stomach or esophagus may be injurious. Insertion of a gastric tube may be advisable.

#### PROTECTION INFORMATION

#### GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep peroxide concentrations below exposure limits.

#### PERSONAL PROTECTIVE EQUIPMENT

Chemical splash goggles and appropriate gloves (neoprene, butyl rubber, or vinyl) should be worn. Have available and wear as needed: hard hat with brim; rubber boots; full length face shield; rubber, neoprene, or polyethylene apron; chemical suit with hood and breathing air supply. Do not wear leather gloves or leather soled, porous, or scuffed shoes; can ignite within minutes following contact with peroxide. Clothing can also ignite quickly; Dacron<sup>(R)</sup> polyester is recommended for clothing because it is more resistant to fire than natural fibers. Clothing fires and skin damage occur less quickly with 50% or less peroxide than with 70% material, but adequate personal protection is essential for all industrial concentrations. Protective skin creams offer no protection from hydrogen peroxide and should not be worn.

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#### **DISPOSAL INFORMATION**

#### AQUATIC TOXICITY

The 96-hour LC50 in catfish is 37.4 mg/L.

#### SPILL, LEAK OR RELEASE

Comply with Federal, State, and local regulations on reporting releases of water. Flood area with water and drain to an approved chemical sewer or wastewater treatment system, including municipal sewers if approved. May be destroyed with sodium metabisulfite or sodium sulfite (1.9 lbs. SO<sub>2</sub> equivalent per lb. of peroxide) after diluting to 5-10% peroxide.

#### WASTE DISPOSAL

Comply with Federal, State and local regulations. If approved, may be diluted and drained to a municipal sewer or waste treatment plant. May be drained through a scrap metal pit (iron, copper, etc.) to reduce peroxide concentration.

#### FIRE AND EXPLOSION DATA

FLASH POINT Will not burn.

AUTODECOMPOSITION TEMPERATURE Not applicable.

AUTOIGNITION TEMPERATURE Not applicable.

EXTINGUISHING MEDIA Flush away with water.

#### FLAMMABLE LIMITS IN AIR, % BY VOL.

Will not burn, but decomposition will release oxygen which will increase the explosive limits and burning rate of flammable vapors.

#### FIRE AND EXPLOSION HAZARDS

Strong oxidizer. Contact with clothing or combustibles may cause fire. Contact with organic liquids or vapors may cause immediate fire or explosion, especially if heated, or may result in a delayed detonation.

#### SPECIAL FIRE FIGHTING INSTRUCTIONS

Flood with water. Cool tanks or containers. Wear full protective clothing (rubber suit and boots) including chemical splash goggles or hood and self-contained breathing apparatus.

#### **HEALTH HAZARD INFORMATION**

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Over-Exposure, and Medical Conditions Aggravated by Exposure)

Causes eye burns; effects may be delayed. Causes skin irritation or burns. Causes irritation of nose, throat, and lungs. Harmful if swallowed.

Inhalation 8-hour LC50: >2000 ppm in rats (90%  $H_2O_2$ ) Skin absorption LD50: 700 mg/kg (90%  $H_2O_2$ ); 9200 mg/kg (70%  $H_2O_2$ ) in rabbits

Oral LD50: 75 mg/kg in rats  $(75\% H_2O_2)$ 

Toxic effects described in animals from short exposures include irritation and corrosion of mucosal surfaces. Tests in animals demonstrate no carcinogenic activity. Tests for mutagenic activity in bacterial or mammalian cell cultures have been inconclusive, with positive results in some studies, and negative results in others. Tests for developmental activity (effects to the fetus) in animal species have been inconclusive, with positive results in some studies, and negative results in others. Tests in animals demonstrate no reproductive toxicity.

Human health effects of overexposure may initially include: skin irritation with discomfort or rash, eye irritation with discomfort, tearing, or blurring of vision, or irritation of the upper respiratory passages. Higher exposures may lead to these effects: eye corrosion with corneal or conjunctival ulceration, skin burns or ulceration, or temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath. There are inconclusive or unverified reports of human sensitization.

E-91988 Date: 3/87

#### NPCA - HMIS RATINGS

| Health              | 3 | Health          | 2   |
|---------------------|---|-----------------|-----|
| Flammability        | 0 | Flammability    | 0   |
| Reactivity          | 2 | Reactivity      | 1   |
| Personal Protection | - | Unusual Hazards | OXY |

Personal Protection rating to be supplied by user depending on use conditions.

#### ADDITIONAL INFORMATION AND REFERENCES

For further information, see Du Pont Hydrogen Peroxide Storage and Handling Bulletin.

DATE OF LATEST REVISION/REVIEW: 3/87
PERSON RESPONSIBLE FOR MSDS: J. C. WATTS
Du Pont Co.

C&P Dept., Chestnut Run, Wilmington, DE 19898

NFPA RATINGS

(302) 999-4946

OU PONT

ACCT: 13391 CAT NO: A9494 133918-01 01/30/90 DATE: INDEX: 02900260052

\*\*ACETONE\*\* \*\*ACETONE\*\* \*\*ACETONE\*\* MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC CHEMICAL DIVISION 1 REAGENT LANE FAIR LAWN NJ 07410 (201) 796-7100 EMERGENCY NUMBER: (201) 796-7100 CHEMTREC ASSISTANCE: (800) +24-9300

End of Endowene

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 67-64-1

SUBSTANCE: \*\*ACETONE\*\*

TRADE NAMES/SYNONYMS: MUL NAMES/STAUNTMS:
DIMETHYLFORMALDEHYDE; DIMETHYLKETAL; DIMETHYL KETONE; BETA-KETOPROP
PROPANONE; 2-PROPANONE; PYROACETIC ETHER; B-KETOPROPANE; RCRA UUU02;
STCC +908105; UN 1090; A-9+9; A-+0; A-20; A-19; A-9+6; A-18;
A-18-S; A-18-SK; A-11; A-11-S; A-16-P; A-16-S; C3H6O; ACC001+0 BETA-KETOPROPANE;

CHEMICAL FAMILY: KETONE, ALIPHATIC

MOLECULAR FORMULA: C-H3-C-O-C-H3

MOLECULAR WEIGHT: 58.08

CERCLA RATINGS (SCALE 0-3): HEALTH:1 FIRE:3 REACTIVITY: NFPA RATINGS (SCALE 0-4): HEALTH:1 FIRE:3 REACTIVITY:0 FIRE:3 REACTIVITY:0 PERSISTENCE:0

COMPONENTS AND CONTAMINANTS

COMPONENT: ACETONE

PERCENT: 100

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ACETONE:
750 PPM (1780 MG/M3) OSHA TWA; 1000 PPM (2375 MG/M3) OSHA STEL
750 PPM (1780 MG/M3) ACGIH TWA; 1000 PPM (2375 MG/M3) ACGIH STEL
250 PPM (590 MG/M3) NIOSH RECOMMENDED 10 HOUR TWA

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

......... PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS, VOLATILE LIQUID WITH A CHARACTERISTIC,

SWEETISH, FRAGRANT, MINT-LIKE ODOR AND PUNGENT, SWEETISH TASTE.

BOILING POINT: 133 F (56 C) MELTING POINT: -139 F (-95 C)

SPECIFIC GRAVITY: 0.7899 **VOLATILITY: 100%** 

VAPOR PRESSURE: 180 MMHG a 20 C EVAPORATION RATE: (BUTYL ACETATE:1) 14,4

SOLUBILITY IN WATER: VERY SOLUBLE PH: NEUTRAL IN SOLUTION

ODOR THRESHOLD: 20 PPM VAPOR DENSITY: 2.0

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ETHER, CHLOROFORM, BENZENE, MOST OILS, DIMETHYLFORMAMIDE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD: Dangerous fire Hazard when exposed to heat or flame.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

FLASH POINT: -4 F (-20 C) (CC) UPPER EXPLOSIVE LIMIT: 13%

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LOWER EXPLOSIVE LIMIT: 2.5% AUTOIGNITION TEMP,: 869 F (465 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA: DRY CHEMICAL, CARBO DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR ALCOHOL FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.+).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. COOL FIRE-EXPOSED CONTAINERS WITH
WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM STORAGE TANK
ENDS. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR
NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN
CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF
STORAGE TANK DUE TO FIRE (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4,

EXTINGUISH ONLY IF FLOW CAN BE STOPPED. USE FLOODING AMOUNTS OF WATER AS A FOG; SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS; KEEP UPWIND. IF FIRE IS UNCONTROLLABLE OR CONTAINERS ARE EXPOSED TO DIRECT FLAME, EVACUATE TO A RADIUS OF 1500 FEET. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

WATER MAY BE INEFFECTIVE (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, EIGHTH EDITION).

ALCOHOL FORM (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIAL, EIGHTH EDITION).

#### TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172.101: FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172,101 AND SUBPART E: FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49CFR173,119 EXCEPTIONS: 49CFR173,118

TOXICITY

ACETONE:

GUIDE PAGE 26).

ACETONE:
500 PPM EYE-HUMAN IRRITATION; 395 MG OPEN SKIN-RABBIT MILD IRRITATION; 3950 UG
EYE-RABBIT SEVERE IRRITATION; 20 MG/2+ HOURS EYE-RABBIT MODERATE IRRITATION;
500 MG/2+ HOURS SKIN-RABBIT MILD IRRITATION; 500 PPM INHALATION-HUMAN TCLO;
12000 PPM/+ HOURS INHALATION-MAN TCLO; 10 MG/M3/6 HOURS INHALATION-MAN TCLO;
++0 UG/M3/6 MINUTES INHALATION-MAN TCLO; 2857 MG/KG ORAL-MAN TDLO; 1159 MG/KG
UNREPORTED-MAN LDLO; 5800 MG/KG ORAL-RAT LD50; 8 GM/KG ORAL-DOG LDLO;
3000 MG/KG ORAL-MOUSE LD50; 53+0 MG/KG ORAL-RABBIT LD50; 20 GM/KG SKIN-RABBIT
LD50; 110 GM/M3/1 HOUR INHALATION-MOUSE LCLO; 1297 MG/KG INTRAPERITONEAL-MOUSE
LD50; 8 GM/KG INTRAPERITONEAL-DOG LDLO; 500 MG/KG INTRAPERITONEAL-RAT LDLO;
1576 MG/KG INTRAVENOUS-RABBIT LDLO; 5500 MG/KG INTRAVENOUS-RAT LD50; + GM/KG
INTRAVENOUS-MOUSE LDLO; 5000 MG/KG SUBCUTANEOUS-GUINEA PIG LDLO; 5 GM/KG
SUBCUTANEOUS-DOG LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); CARCINOGEN STATUS:

NONE. ACETONE IS A SKIN, EYE AND MUCOUS MEMBRANE IRRITANT AND CENTRAL NERVOUS SYSTEM DEPRESSANT. THE USE OF ALCOHOLIC BEVERAGES MAY ENHANCE THE TOXIC EFFECTS, PERSONS WITH CHRONIC RESPIRATORY OR SKIN DISEASES MAY BE AT AN INCREASED RISK FROM EXPOSURE.

HEALTH EFFECTS AND FIRST AID

INHALATION:

ACETONE:

ACETONE:

IRRITANT/NARCOTIC. 20,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE- VAPOR CONCENTRATIONS AROUND 1000 PPM MAY CAUSE SLIGHT

TRANSIENT IRRITATION OF THE UPPER RESPIRATORY TRACT, EXPOSURE TO 12,000

PPM HAS CAUSED THROAT IRRITATION AND CENTRAL NERVOUS SYSTEM DEPRESSION

WITH WEAKNESS OF THE LEGS, HEADACHE, DIZZINESS, DROWSINESS, NAUSEA AND A

GENERAL FEELING OF MALAISE, OTHER POSSIBLE EFFECTS FROM EXPOSURE TO HIGH

CONCENTRATIONS INCLUDE DRYNESS OF THE MOUTH AND THROAT, INCOORDINATION OF

MOTION AND SPEECH, RESTLESSNESS, ANOREXIA, VOMITING, SOMETIMES FOLLOWED BY

HEMATEMESIS, HYPOTHERMIA, DYSPNEA, SLOW, IRREGULAR RESPIRATION, SLOW, WEAK

PULSE, PROGRESSIVE COLLAPSE WITH STUPOR, AND IN SEVERE CASES, COMMA, LIVER

DAMAGE MAY BE INDICATED BY HIGH UROBILIN LEVELS AND JAUNDICE, KIDNEY

DAMAGE MAY BE INDICATED BY ALBUMIN AND RED AND WHITE BLOOD CELLS IN THE

URINE, BLOOD GLUCOSE LEVELS MAY BE AFFECTED AND FATAL KETOSIS IS POSSIBLE.

CHRONIC EXPOSURE- WORKERS EXPOSED TO 500 PPM/6 HOURS/6 DAYS EXPERIENCED

MUCOUS MEMBRANE IRRITATION, AN UNPLEASANT SMELL, HEAVY EYES, OVERNIGHT

HEADACHE, AND GENERAL WEAKNESS ACCOMPANIED BY HEMATOLOGIC CHANGES.

RECOVERY OCCURRED IN SEVERAL DAYS. WORKERS EXPOSED TO 1000 PPM FOR

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3 HOURS/DAY FOR 7-15 YEARS REPORTED CHRONIC INFLAMMATION OF THE RESPIRATORY TRACT, STOMACH AND DUODENUM, DIZZINESS, LOSS OF STRENGTH, AND ASTHENIA. DROWSINESS, VERTIGO, SENSATION OF HEAT, AND COUGHING HAVE ALSO BEEN REPORTED FROM CHRONIC EXPOSURE TO LOW CONCENTRATIONS. ANIMAL STUDIES SHOW ADVERSE EFFECTS ON FERTILITY WHEN FEMALES WERE EXPOSED CHRONICALLY DURING PREGNANCY.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT: ACETONE:

IRRITANT

- RITANT.
  ACUTE EXPOSURE- CONTACT WITH THE LIQUID CAUSED MILD IRRITATION IN RABBITS.
  CELLULAR DAMAGE TO THE OUTER LAYERS OF THE EPITHELIUM WITH MILD EDEMA AND
  HYPEREMIA HAS BEEN DEMONSTRATED IN HUMANS, BUT WAS READILY REVERSIBLE.
  SMALL AMOUNTS MAY BE ABSORBED THROUGH INTACT SKIN.
  CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE DERMATITIS WITH
  DRYING, CRACKING, AND ERYTHEMA DUE TO THE DEFATTING ACTION. THE AMOUNT
  ABSORBED THROUGH THE SKIN INCREASES DIRECTLY WITH THE FREQUENCY AND EXTENT
  OF THE EXPOSURE. 2 OF 3 GUINEA PIGS EXPOSED BY SKIN CONTACT FOR 3 WEEKS
  DEVELOPED CATARACTS BY THE END OF THREE MONTHS.
- RST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL FIRST AID-ATTENTION IMMEDIATELY.

EYE CONTACT: ACETONE: IRRITANT.

- CTANT.

  CUTE EXPOSURE- IN HUMANS, VAPORS PRODUCE ONLY SLIGHT IRRITATION WHEN THE CONCENTRATION IS AT OR BELOW 1000 PPM. HOWEVER, HIGH VAPOR CONCENTRATIONS HAVE CAUSED CORNEAL EPITHELIAL AND CONJUNCTIVAL INJURY IN ANIMALS. LIQUID SPLASHED IN HUMAN EYES CAUSES AN IMMEDIATE STINGING SENSATION AND, IF WASHED PROMPTLY, DAMAGE ONLY TO THE CORNEAL EPITHELIUM CHARACTERIZED BY MICROSCOPIC GRAY DOTS AND A FOREIGN BODY SENSATION, WHICH HEALS COMPLETELY IN 1-2 DAYS.

  4RONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE TO THE VAPORS MAY CAUSE
- CHRONIC IRRITATION OR CONJUNCTIVITIS,
- RST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALI Occasionally Lifting Upper and Lower Lids, until no evidence of chemical Remains (approximately 15-20 minutes). Get medical attention immediately.

INCESTION: ACETONE: NARCOTIC

- ACUTE EXPOSURE- MAY CAUSE A FRUITY ODOR OF THE BREATH AND MUCOUS MEMBRANE AND GASTROENTERIC IRRITATION. IN ACUTE CASES, A LATENT PERIOD MAY BE FOLLOWED BY RESTLESSNESS AND VOMITING PROCEEDING TO HEMATEMESIS AND PROGRESSIVE COLLAPSE WITH STUPOR. HEPATORENAL LESIONS HAVE BEEN REPORTED. THE BLOOD GLUCOSE LEVEL MAY BE AFFECTED AND KETOSIS MAY BE FATAL. 10-20 MILLILITERS HAVE BEEN TOLERATED WITHOUT ILL EFFECTS. 200 MILLILITERS HAVE CAUSED STUPOR WITHIN A HALF HOUR, FLUSHED CHEEKS, SHALLOW RESPIRATION, AND COMA WHICH LASTED FOR 12 HOURS. RENAL GLUCOSURIA PERSISTED FOR 5 MONTHS. CHRONIC EXPOSURE- NO DATA AVAILABLE.
- RST AID- IF THE PERSON IS CONSCIOUS AND NOT CONVULSING, INDUCE EMESIS BY GIVING SYRUP OF IPECAC FOLLOWED BY WATER. (IF VOMITING OCCURS KEEP THE HEAD BELOW THE HIPS TO PREVENT ASPIRATION). REPEAT IN 2D MINUTES IF NOT EFFECTIVE INITIALLY. GIVE ACTIVATED CHARCOAL. IN PATIENTS WITH DEPRESSED RESPIRATION OR IF EMESIS IS NOT PRODUCED, PERFORM GASTRIC LAVAGE CAUTIOUSLY (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GASTRIC LAVAGE SHOULD BE PERFORMED BY GUALIFIED MEDICAL PERSONNEL. GET FIRST AID-MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE: NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES,

INCOMPATIBILITIES:

INCOMPATIBILITIES:
ACETONE:
ACIDS: INCOMPATIBLE,
AMINES (ALIPHATIC): INCOMPATIBLE,
BROMINE: VIOLENT REACTION WITH EXCESS AMOUNTS OF BROMINE,
BROMINE TRIFLUORIDE: EXPLOSION ON CONTACT,
BROMOFORM: VIOLENT REACTION IN PRESENCE OF BASES (E.G. POTASSIUM HYDROXIDE).
CHLOROFORM: VIOLE'S REACTION IN PRESENCE OF A BASE,
CHROMIUM TRIOXIDE: IGNITION ON CONTACT AT AMBIENT TEMPERATURE,
CHROMYL CHLORIDE: INCANDESCENT REACTION,
DIOXYGEN DIFLUORIDE + SOLID CARBON DIOXIDE: EXPLOSION AT -78 C,
HEXACHLOROMELAMINE: POSSIBLE EXPLOSION.

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HYDROGEN PEROXIDE: EXPLOSION.

NITRIC ACID: IGNITION.

NITRIC + ACETIC ACID MIXTURE: POSSIBLE EXPLOSION.

NITRIC + SULFURIC ACID MIXTURE: VIOLENT OXIDATION.

NITROSYL CHLORIDE: EXPLOSIVE REACTION.

NITROSYL PERCHLORATE: IGNITION AND EXPLOSION.

NITRYL PERCHLORATE: IGNITION AND EXPLOSION.

OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.

PERMONOSULFURIC ACID: EXPLOSION.

PLASTICS: INCOMPATIBLE.

PLATINUM + NITROSYL CHLORIDE: POSSIBLE EXPLOSION.

POTASSIUM-TERT-BUTOXIDE: IGNITION.

RAYON: INCOMPATIBLE.

SODIUM HYPOBROMITE: EXPLOSION.

SODIUM HYPOBROMITE: POSSIBLE EXPLOSION.

SULFUR DICHLORIDE: VIOLENT REACTION.

SULFUR DICHLORIDE: VIOLENT REACTION.

THIODIGLYCOL + HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.

THIOTRIAZYL PERCHLORATE: POSSIBLE EXPLOSION.

1,1,1-TRICHLOROETHANE: EXOTHERMIC CONDENSATION BY A BASIC CATALYST.

TRICHLOROMELAMINE: POSSIBLE EXPLOSION.

#### KETONES:

ACETALDEHYDE: VIOLENT CONDENSATION REACTION,
NITRIC ACID + HYDROGEN PEROXIDE: FORMATION OF EXPLOSIVE PRODUCT,
PERCHLORIC ACID: VIOLENT DECOMPOSITION,

#### DECOMPOSITION:

THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

#### POLYMERIZATION:

HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

#### STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE, FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

#### \*\*STORAGE\*\*

STORE IN ACCORDANCE WITH 29 CFR 1910, 106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

#### \*\*DISPOSAL\*\*

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40CFR 262, EPA HAZARDOUS WASTE NUMBER U002.

#### 

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNCECESSARY PERSONNEL. DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A CONSIDERABLE DISTANCE IN HEAT OF FIRE.

#### 

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES, STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER
SPRAY TO REDUCE VAPORS, FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER
ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL, FOR LARGER
SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL, NO SMOKING, FLAMES OR
FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND
DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES
THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS
SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE
AND THE STATE EMERGENCY PESPONSE COMMISSION (40 CFR 355, 40). IF THE RELEASE OF
THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE
CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE
METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

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VENTILATION: ROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS
BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO
CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF
LABOR, 29CFR1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND
IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND
BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND
HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA),

1000 PPM- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).
ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR
CARTRIDGE(S). ANY SUPPLIED-AIR RESPIRATOR, ANY SELF-CONTAINED BREATHING APPARATUS.

6250 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

12.500 PPM- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER, ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE, ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.

20,000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER. ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SURSTANCE

EYE PROTECTION: EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, CREATION DATE: 09/06/84 REV INC REVISION DATE: 10/13/89

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SECTION 1.

# Product Identification

Manufacturer: General Refractories Co.

Address: 600 Grant St., Room 3000, Pittsburgh, PA 15219

Main Telephone Number: 412-562-6000

Emergency Telephone Number: 215-666-4868

Product Name, Sales Name or Trade Name: DIBOND 60R

Product Type: Magnesite-Chromite Refractory

#### SECTION 2.

# Hazardous Ingredients

| Chemical<br>Name              | Common<br>Name | CAS<br>Number | Per<br>Cent** | osha<br>Pel | ACGIH C | arcinogen<br>(Y/N)* |
|-------------------------------|----------------|---------------|---------------|-------------|---------|---------------------|
|                               |                |               |               |             |         |                     |
| Ferro-<br>chromite<br>Calcium | (FeCr2O4)      | 12737-27-8    | <25.0         | (1)         | (1)     | No                  |
|                               | (Ca2SiO4)      | 10034-77-2    | <1.5          | 50 MPPCF    | 30 MPPC | F No                |

Note: (1) Contains Cr(III) which is not listed as hazardous by NOISH/ OSHA. ACGIH TLV for Cr(III) is 0.5 mg/m<sup>3</sup>. The main ingredient in this product is sinter MgO which is not hazardous.

\*Per NTP, IARC or OSHA lists. \*\*On Phase Basis. \*\*\*Total Basis.

#### SECTION 3.

# Physical Data

Appearance: Brown-Black Brick Shape

Specific Gravity: 3.10-3.25

Boiling Point: NI

Evaporation Rate: NI

Solubility in Alcohol: Insoluble

Percent Volatile by Vol.: NI

Odor: Odorless

Melting Point: Over 2200°C

Vapor Pressure: NI

Solubility in H2O: Insoluble Other Solvents: Strong Acids

Vapor Density: NI

#### Fire and Explosion Hazard Data SECTION 4.

Flash Point (Method used): Nonflammable

Flammable Limits:

LEL NA

UEL NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: NA

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SECTION 5.

Health Hazard Data

Primary Routes

Exposure Symptoms

Emergency Procedures

of Entry

Inhalation

Cough, impaired pulm. func. if exposed to dust

Move to fresh air.

Ingestion

NE

NE

NE

Skin Contact and Absorption Irritation

Wash with water.

Eyes

Irritation

Flush with water.

Other Potential Health Risks

SECTION 6.

Potential Exposure

When

Hazard Form

Installation

Dust generated during mixing.

Removal

Dust from tear-out after service.

SECTION 7.

. Corrosivity and Reactivity Data

Stabliity: Stable

Incompatability (materials to avoid): None

Decomposition Products: None

Conditions to be Avoided: None

SECTION 8.

Disposal Procedures

Spill or Leak Procedures: Clean up like any solid material.

Waste Disposal Method: Approved landfill in accordance with all federal,

state and local regulations.

Page 3

SECTION 9. Personal Protective Equipment/Procedures

Respiratory Protection: Yes Type: NIOSH/OSHA approved

dust mask.

Ventilation--Local: Yes

Mechanical(General): During handling (cutting of brick

or discharging the bags).

Other: NA

Protective Gloves: Non-porous gloves

Eye Protection: Safety glasses

Other Equipment: Steel toe shoes

Action to be Taken During Repair and Maintenance of Equipment that has been in Contact with this Product: Use Recommended Safety Equipment.

SECTION 10. Special Precautions

During Storage: None

Other: None

SECTION 11. Preparation/Revision

Date: 9/16/85

NA=Not Applicable

NI=No Information or Test Data

NE=Not Established



#### **GENERAL REFRACTORIES COMPANY**

Customer:

NOV 1 9 1990

11/14/90

Cerro Copper Products PO Box 66800 St. Louis, MO

E&E AFFAIRS

(For Sauget, IL)

Dear Customer,

This product contains a toxic chemical or chemicals as listed on MSDS form attached. It is subject to the reporting requirements of section 313-Title-111 of the superfund amendments and reauthorization act of 1986 and 40 CFR Part 372.

Product: Dibond 60R & SK-Dibond 60R

CERRO COPPER FRODUCTS COMPANY MSDS NUMBER + CCPC-CO+0327

# MATERIAL SAFETY DATA SHEET

## SECTION 1.

- Product Identification

Manufacturer: General Refractories Co.

Address: 600 Grant St., Room 3000, Pittsburgh, PA 15219

Main Telephone Number: 412-562-6000

Emergency Telephone Number: 215-666-4868

Product Name, Sales Name or Trade Name: GREFCHEM 60 R

Product Type: Magnesite-Chromite Refractories

#### SECTION 2.

# Hazardous Ingredients

| Chemical<br>Name              | Common<br>Name | CAS<br>Number | Per<br>Cent** | OSHA<br>PEL | ACGIH Ca<br>TLV | rcinogen (Y/N)* |
|-------------------------------|----------------|---------------|---------------|-------------|-----------------|-----------------|
| Ferro-<br>chromite<br>Calcium | (FeCr204)      | 12737-27-8    | <20.0         | (1)         | (1)             | No              |
| Silicate                      | (Ca2SiO4)      | 10034-77-2    | <1.5          | 50 MPPCF    | 30 MPPCF        | No              |

Note: (1) Contains Cr(III) which is not listed as hazardous by NIOSH/OSHA. ACGIH TLV for Cr(III) is 0.5 mg/m3. The main ingredient in this product is sinter MgO which is not hazardous.

\*Per NTP, IARC or OSHA lists. \*\*On Phase Basis. \*\*\*Total Basis.

#### SECTION 3.

# Physical Data

Appearance: Brown-Black Brick Shape Specific Gravity: 3.10-3.25 Boiling Point: NI

Evaporation Rate: NI

Solubility in Alcohol: Insoluble

Percent Volatile by Vol.: NI

Odor: Odorless

Melting Point: Over 2200°C

Vapor Pressure: NI

Solubility in H2O: Insoluble Other Solvents: Strong acids

Vapor Density: NI

#### SECTION 4. Fire and Explosion Hazard Data

Flash Point (Method used): Nonflammable

Flammable Limits: LEL NA

Extinguishing Media: Nonflammable

Special Fire Fighting Procedures: None Unusual Fire and Explosion Hazards: None UEL NA

Page 2

SECTION 5.

Health Hazard Data

Primary Routes Exposure Symptoms Emergency Procedures

of Entry

Inhalation Cough, dyspnea, Black Sputum Move to fresh air.

Pulm. Func., Fibrosis

Ingestion NE NE

Skin Contact Irritation Wash with water.

and Absorption

Eyes Irritation Flush with water.

Other Potential NE NE

Health Risks

SECTION 6. Potential Exposure

When Hazard Form

Installation Dust from cutting brick.

Removal Dust from tear-out after service.

SECTION 7. Corrosivity and Reactivity Data

Stabliity: Stable Polymerization: Will not occur

Incompatability (materials to avoid): None

Decomposition Products: CO, CO2, CH4, H2 and H2O

from binder.

Conditions to be Avoided: Open flame and intense heat (if not

in service).

SECTION 8. Disposal Procedures

Spill or Leak Procedures: Clean up like any solid material.

Waste Disposal Method: Approved landfill in accordance with all federal.

#### Page 3

Personal Protective Equipment/Procedures SECTION 9.

Respiratory Protection: Yes Type: NIOSH approved dust

respirator.

Ventilation--Local:

Mechanical(General): During handling, cutting, etc.

Other: NA

Protective Gloves: Non-porous gloves.

Eye Protection: Safety glasses or goggles.

Other Equipment: Steel toe shoes.

Action to be Taken During Repair and Maintenance of Equipment that has

been in Contact with this Product: Regular clean up.

SECTION 10.

Special Precautions

None During Storage:

Other: None

SECTION 11. Preparation/Revision

and the second of the second o

Date: 11/14/85



#### **GENERAL REFRACTORIES COMPANY**

Customer:

Cerro Copper Products PO Box 66800 St. Louis, MO 633

(For Sauget, IL)

Date: 11/14/9

E&E AFFAIRS

Dear Customer,

This product contains a toxic chemical or chemicals as listed on MSDS form attached. It is subject to the reporting requirements of section 313-Title-111 of the superfund amendments and reauthorization act of 1986 and 40 CFR Part 372.

Product: Grefchem 60R & SK-Grefchem 60R

Sincerely Yours
General Refractories Co.

Barney D. Fowler Manager Personnel & Safety

Notice: This Notification Must not be detached from the MSDS. Any copying and Distribution of this MSDS must include this notification.

#### MATERIAL SAFETY DATA CHEET

CERRO COFFER PRODUCTS COMPANY MSDS NUMBER - COPO-00-0330 LIE OF FRINTING: 05/15/89 MANUFACTURER: GLYFTAL, INC. 305 EASTERN AVE CHELSEA, MA 02150 TELEFHONE: 617-884-6918 FRODUCT CLASS: AIR DRY ENAMEL CODE IDENTIFICATION: 1201 TRADE NAME: GLYFTAL HMIS 2 3 0 SECTION II - HAZARDOUS INGREDIENTS \_\_\_\_\_\_ PERCENT ACGIH TLV OSHA FEL INGREDIENT BY WEIGHT FFM mg/cu.m. FPM mg/cu.m. 34.3 100 XYLENE 100 CAS NUMBER 1330-20-7 HMIS HEALTH=1 FLAMMABILITY=3 REACTIVITY=0 XYLOL VM&P NAPTHA 5.6 300 CAS NUMBER 8030-30-6 HMIS HEALTH=2 FLAMMABILITY=3 REACTIVITY=0 ALIFHATIC HYDROCARBON STODDARD SOLVENT 0.2500 CAS NUMBER 64741-41-9 HMIS HEALTH=2 FLAMMABILITY=2 REACTIVITY=0 HYDROCARBON MIXTURE N/A MEANS NOT AVAILABLE N/EST MEANS NOTESTABLISHED NOT EST. means NOT ESTABLISHED NOT EST. means NOT ESTABLISHED N/A MEANS NOT AVAILABLE NOT EST MEANS NOT ESTABLISHED SECTION III - PHYSICAL DATA \_\_\_\_\_ BOILING RANGE: 250.0 TO 284.0 F VAPOR DENSITY: HEAVIER THAN AIR EVAPORATION RATE: SLOWER THAN ETHER VOC (less water): 3.91 LBS/GAL PERCENT VOLATILE BY VOLUME: 54.5 WEIGHT FER GALLON: 9.75 POUNDS VAPOR PRESSURE: NOT AVAILABLE MELTING POINT: NOT APPLICABLE SOLUBILITY IN WATER: NEGLIGBLE APPEARANCE AND ODOR: RED LQUID WITH PAINT ODOR SECTION IV - FIRE AND EXPLOSION HAZARD DATA \_\_\_\_\_\_ OSHA CATEGORY: FLAMMABLE LIQUID LEL: 1.0 UEL: N/AV FU H POINT : 72 F PENSKY MARTIN EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam UNUSUAL FIRE AND EXPLOSION HAZARDS: Pressure may build up in closed containers that are exposed to heat.

Solvent vapors are heavier than air and may travel a considerable distance along the ground to an ignition source and "flash back". SPECIAL FIRE FIGHTING FROCEDURES:

Water may be ineffective, however, water may be used to cool closed . containers that are exposed to heat. Firefighting personnel should wear self-contained breathing apparatus.

SECTION V - HEALTH HAZARD DATA

\_\_\_\_\_\_

THRESHOLD LIMIT VALUE: SEE SECTION II PRIMARY ROUTE(S) OF ENTRY:

Inhalation and skin contact

EFFECTS OF OVEREXFOSURE:

Headache, nausea, dizziness, confusion, irritability.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Respiratory difficulties or preexisting skin sensitization.

CARCINOGENICITY:

None of the components of this product are reported carcinogens. EMERGENCY FIRST AID PROCEDURES:

INHALATION: Remove to fresh air. Administer artificial respiration or oxygen if breathing is difficult.

SKIN: Wash affected area with soap and water. Remove and launder contaminated clothing. Consult a physician if irritation persists.

EYES: Flush immediately with large amounts of water for at least 15 minutes. Take to a physician for medical treatment.

INGESTION: Call a physician immediately.

ACUTE: Skin and eye contact: Frimary irritation.

CHRONIC: Xylene contained in this material has been found to cause the follo wing effects in laboratory animals: amenia, liver abnormalities, liver and eye damage.

SECTION VI - REACTIVITY DATA

STABILITY: NORMAL STABLE

CONDITIONS TO AVOID:

None known

INCOMPATIBILITY (Materials to avoid)

Strong acids and bases

HAZARDOUS DECOMPOSITION FRODUCTS:

BY FIRE: Normal products of incomplete combustion.

HAZARDOUS FOLYMERIZATION: DOES NOT OCCUR

CONDITIONS TO AVOID:

None known

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Provide adequate ventilation. Remove all possible ignition sources. Absorb and dispose using non-sparking tools.

Eliminate all sources of ignition. Evacuate unprotected personnel. Water spray may be used. To contain run-off, cover with an absorbent material

MSDS: 1201 FAGE: 3

, place in containers for proper disposal. Flush area with water to remove residue.

WASTE DISFOSAL METHOD:

Dispose in accordance with local applicable regulations. Dispose of using an approved incineration process or in accordance with local, state, and federal regulations regarding health and pollution.

#### SECTION VIII - SFECIAL PROTECTION INFORMATION

#### RESPIRATORY FROTECTION:

In outdoor or open areas use Bureau of Mines approved mechanical filter respirator to remove solid airborne particulates of overspray. Indoors, where ventilation is inadequate. use Bureau of Mines approved chemical-mechanical respirators designed to remove both particulate and vapor.

VENTILATION:

PROTECTIVE GLOVES:

Recommended if skin contact is likely.

EYE PROTECTION:

Chemical splash goggles recommended if potential for splash or eye contact is likely.

OTHER PROTECTIVE EQUIPMENT:

Recommended as needed to avoid contact.

SECTION IX - SPECIAL FRECAUTIONS

#### FRECAUTIONS TO BE TAKEN IN HANDLING OR STORING:

Store in a cool dry place away from heat, sparks and open flame. Keep containers closed and upright to prevent leakage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquid storeroom or cabinet. Metal containers should be grounded when transferring material from one container to another. Do not reuse product container for any purpose.

OTHER PRECAUTIONS:

PREPARED BY: TECHNICAL STAFF

REFERENCE DATE: 01/26/89

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON DATA BELIEVED TO BE CORRECT. HOWEVER, NO GUARANTEE OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS MADE WITH RESPECT TO THE INFORMATION ABOVE.

WHOM IT MAY CONCERN: EFFECTIVE JAN 1, 1989, WE ARE REQUIRED BY SARA TIT LE III SECTION 313 OF THE RIGHT TO KNOW LEGISLATION, TO INFORM YOU OF THE FERCENTAGE OF ANY INGREDIENT IN A PRODUCT WHICH IS IN THE 313 LIST OR AS AN LISTING AS A COMPONENT OF A MATERIAL WHICH IS IN A CATEGORY OF CHEMICAL LIST.

PRODUCT: 1201 GLYPTAL

34.3% XYLENE (CAS NUMBER 1330-20-7)

IF YOU WILL MULTIPLY YOUR TOTAL FURCHASES FROM US AS WELL AS FROM OTHER SU FPLIERS BY THE PERCENTAGE OF EACH INGREDIENT FOUND IN EACH PRODUCT AND IF THE TOTAL QUANTITY EXCEEDS THE REPORTABLE QUANTITY FOR THAT INGREDIENT YOU ARE REQUIRED TO FILE FORM R REPORTS.

# CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-06-0332

MATERIAL S JACA42, 5: 0.12222 - 9:11 - 0.1222222. INTERCHEM. INC. ST.LOUIS. MO. EMERGENCY PHONE: (314)436-1300 63107 PRODUCT CODE:113 EFFECTIVE DATE:5-13-88 CERRO TUBE CLNR. MSD: 113-1 PREDUCT NAME: HAZARDOUS INGREDIENTS (TYPICAL VALUES -- NOT SPECIFICATION) GLYCOL ETHER MONOFT-ANGLAMIN 8-15% Physical Data Section 1 <u>Boiling Boint: 275 dem. F.</u> Sol. In Water: COMPLETE Sp. Gravity (325/25°C):.977 Vap. Press. <u>(mmho @ 25°C):</u>NA % Volatile by Volume: 100% inclos. H20 Vap. Density (Air = 1):NA Appearance and Odor: CLEAR LIQUID. WATER-LIKE VISCOSITY. ETHEREAL ODOR. Fire and Explosion Hazard Data Section 2 Fiash Soint:NONE ammable i imits: UFL (% Vol):NA <u>Method Used:</u>TCC LFL (% Vol):NA Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE. Special Fine Fighting Equipment and Hazands: NONE KNOWN. Section 3 Reactivity Data Stability: STABLE Incompatibility:STRONG ACIDS AND OXIDIZERS. pazarcous Decomposition Products: WHEN EXPOSED TO EXTREMELY HIGH TEMPERATURES CARRON DIGXIDE AND CARRON MONOXIDE MAY BE GIVEN DEF. <u> Hazarcous Polymerization:WILL NOT OCCUR.</u> Spill, Leakage, and Disposal Procedures Section 4 Action to se taken for Spills (Use Appropriate Safety Equipment): ABSORB WIT-TAERT MATERIAL AND FLUSH REMAINDER WITH LARGE AMOUNTS OF WATER. Disposal Methic: CONSULT FEDERAL. STATE AND LOCAL AUTHORITIES.

|   | INTERCHEM. INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300                                                                                                                                     |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | FEFECTIVE DATE:5-13-88 PRODUCT CODE:113                                                                                                                                                                |
|   | CERRO TUBE CENR. MSD: 113-1                                                                                                                                                                            |
|   | Section 5 Health Hazard Data Effect of Overexposure                                                                                                                                                    |
|   | Incestion: MAY CAUSE MODERATE TO SEVERE GASTROINTESTINAL IRRITATION DEPENDING UPON AMOUNT INGESTED. MAY CAUSE BURNS TO MOUTH, THROAT, STOMACH, ETC.                                                    |
|   | Eye Contect: MAY CAUSE MODERATE TO SEVERE EYE IRRITATION AND IRRITATION CONTROL SURROUNDING TISSUE.                                                                                                    |
|   | <u>Skin Contact: MAY CAUSE MODERATE SKIN IRRITATION, REDNESS, DRYING, ITCHING</u><br>ETC.                                                                                                              |
|   | Skin Absorption: WILL NOT OCCUR.                                                                                                                                                                       |
|   | <u>Inhalation:</u> EXCESSIVE INHALATION FROM IMPROPER VENTILATION MAY CAUSE NAUSEA.  DIZZINESS.                                                                                                        |
|   | Section 6 First Aid                                                                                                                                                                                    |
|   | Eves:Flush with large amounts of water for at least 15 minutes while holdin upper and lower lids open. Get medical attention.                                                                          |
| - | Skin:Flush with large amount of water. Apply a moisturizing skin lotion. INTRITATION IS EVIDENT GET MEDICAL ATTENTION.                                                                                 |
|   | <u>Innalation:</u> REMOVE PERSON TO FRESH AIR. IF BREATHING IS DIFFICULT ADMINISTE DXYGEN. GET MEDICAL ATTENTION.                                                                                      |
|   | <u>indestion:</u> Drink 2 GLASSES OF WATER OR MILK AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF THROAT. KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF MATERIAL INTO LUNGS. GET MEDICAL ATTENTION. |
|   | NOTE TO PHYSICIAN:                                                                                                                                                                                     |
|   | <u>Eves:</u>                                                                                                                                                                                           |
|   | Skin:                                                                                                                                                                                                  |
|   | Respiratory:                                                                                                                                                                                           |
|   | <u>Oral:</u>                                                                                                                                                                                           |
|   | Systemici                                                                                                                                                                                              |
|   | <b>;</b> ,                                                                                                                                                                                             |
| - |                                                                                                                                                                                                        |
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|                                                  |                         |              |               | - A:        |                                       |
|--------------------------------------------------|-------------------------|--------------|---------------|-------------|---------------------------------------|
| INTERCHEM. INC.                                  | ST.LOUIS, MO.           | 63107        | EMERGENCY PH  | HONE: (314) | <u>436-1300</u>                       |
| FFEDTIVE DATE:5-1                                | 8-83                    |              |               | PRODUCT     | CODE:113                              |
| RODUCT NAME:                                     |                         |              | CERRO         | TURECUR     | . <u>mSD:</u> 113-1                   |
| ection 7                                         |                         | Special      | Handling In   | formation   |                                       |
| entilation:NORMAL                                | RODM VENTILATI          | ON IS ADE    | QUATE.        |             | *                                     |
| espinatony Protect                               | ion:NONE REQUI          | RED FOR N    | ORMAL USE.    |             |                                       |
| rotective Clothing<br>EXCESSIVE EXPOSE           |                         |              |               |             |                                       |
| <u>ye Protection:</u> SAFE<br>HOULD BE WORN WHEN |                         |              | GUARDS OR C   | HEMICAL SP  | LASH GDGGLE:                          |
| ection B                                         | Sp                      | ecial Pre    | cautions and  | Additional  | Information                           |
| ecautions to ba                                  | Taken in Handl          | ino and S    | torane:TREAT  | EMPTY CONT  | AINERS AS I                           |
| HEY WERE FULL DUE<br>EAT AND KEEP TIGHT          |                         | PRODUCT      | RESIDUE. STO  | RE CONTAINE | RS AWAY FROM                          |
| ditional Informat                                | ion:                    |              |               |             | ·*                                    |
|                                                  |                         |              |               |             |                                       |
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| DNEULT INTERCHEM.                                | INC. FOR FURTH          | ER INFERM    | ATION.        |             |                                       |
| HE INFORMATION GIV<br>XPRESSED OR IMPLIE         |                         | ROVIDED I    | N GOOD FAITH. | . HOWEVER,  | NO WARRANTY.                          |
| .essasen us ineili                               | D <sub>4</sub> 13 MBDZ. |              |               |             |                                       |
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MATERIAL SI ELETTI

INTERCHEM. INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300

EFFECTIVE DATE:8-3-89

PRODUCT CODE: 240

OFCOUGT MOME:"FOILULA 500 CLEANER/DSCREADEL"

MSD:240-1

HAZARDOUS INGREDIENTS (TYPICAL VALUES -- NOT SPECIFICATION)

SODIUM METASILICATE

ETHYLENE GLYCOL MONDBUTYL ETHER

SODIUM HYDROXIDE

:1-5% : :5-10%:

---- Page: 1

2-5%

Section 1

Physical Data

Boiling Point: 200-225 F.

Vap. Press. (mmHp @ 25°C):NA

Vap. Density (Air = 1):NA

Sol. In Water: COMPLETE

Sp. Gravity (325/25°C):1.0542

7 Volatile by Volume: 85.2% incldo. H20

Appearance and Odor: CLEAR, FLUORESCENT GREEN LIQUID. WATER-LIKE VISCOSITY.

LOW ODOR.

Section 2

Fire and Explosion Hazard Data

Flash Point: NONE

Method Used: TCC

Flammable Limits:

LFL (% Vol): NA UFL (% Vol):NA

Extinouishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE.

Roecial Fire Fighting Equipment and Hazards: NONE KNOWN.

Section 3 Reactivity Data

Stability: STABLE

Incompatibility: STRONG ACIDS AND DXIDIZERS.

Hazardous Decomposition Products: CARBON DIOXIDE, CARBON MONOXIDE WHEN EXPOSED TO EXTREMELY HIGH TEMPERATURES.

Hazardous Polymerization: WILL NOT OCCUR.

Section 4 Spill. Leakage, and Disposal Procedures

Action to be taken for Spills (Use Appropriate Safety Equipment): FLUSH WITH LARGE AMOUNTS OF WATER.

Disposal Method: CONSULT FEDERAL, STATE AND LOCAL REGULATIONS.

Page: 2

INTERCHEM. INC. ST.LOUIS. MO. 63107 EMERGENCY PHONE: (314)436-1300

EFFECTIVE DATE:8-3-898

PRODUCT CODE:240

PRODUCT NOYE: "FORMULA 600 CLEANER/DEGREASER"

MGD:240-1

Section 5 Health Hazard Data -- Effect of Overexposure

Ingestion: MAY CAUSE MODERATE TO SEVERE GASTROINTESTINAL IRRITATION DEPENDING UPON AMOUNT INGESTED.

Eve Contact: MAY CAUSE MODERATE TO SEVERE EYE IRRITATION AND IRRITATION OF SURROUNDING TISSUE.

Skin Contact: MAY CAUSE MODERATE SKIN IRRITATION, REDNESS, DRYNESS, ITCHING.

Skin Absorption: WILL NOT OCCUR.

<u>Inhalation: EXCESSIVE INHALATION OF VAPORS IN ENCLOSED AREA MAY CAUSE NAUSEA,</u>
DIZZINESS.

Section 6 First Aid

Eyes: FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING UPPER AND LOWER LIDS OPEN. GET MEDICAL ATTENTION.

Skin: FLUSH WITH LARGE AMOUNT OF WATER. APPLY MOISTURIZING SKIN LOTION. IF IRRITATION IS EVIDENT GET MEDICAL ATTENTION.

Page: 3

| INTERCHEM, INC. ST.LOUI                                   | S. MO. 63107 EMERGENCY PHONE: (314)436-1300                             |             |
|-----------------------------------------------------------|-------------------------------------------------------------------------|-------------|
| EFFECTIVE DATE:8-3-89                                     | PRODUCT CODE:240                                                        |             |
| PRODUCT NAME: "FORMULA 600 C                              | CLEANER/DEGREASER" MSD: 840                                             | <b></b> ;   |
| Section 7                                                 | Special Handling Information                                            |             |
| <u>Ventilation:</u> NORMAL ROOM VEN                       | NTILATION IS ADEQUATE.                                                  |             |
| Respiratory Protection: NONE                              | REQUIRED FOR NORMAL USE.                                                | -           |
| Protective Clothino: WEAR Ch                              | HEMICAL-RESISTANT GLOVES.                                               |             |
| Eye Protection: SAFETY GLASS                              | SES OR CHEMICAL SPLASH GOGGLES.                                         |             |
| Section 8                                                 | Special Precautions and Additional Informati                            | <u>i on</u> |
| Precautions to be Taken in<br>THEY WERE FULL DUE TO PRESE | Handling and Storage: TREAT EMPTY CONTAINERS AS NCE OF PRODUCT RESIDUE. | IF          |
| Additional Information:                                   |                                                                         | ****        |
|                                                           |                                                                         |             |
|                                                           |                                                                         |             |
| DONSULT INTERCHEM, INC. FOR                               | R FURTHER INFORMATION.                                                  |             |
| THE INFORMATION GIVEN HERE                                | IN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANT                       | ГΥ,         |
|                                                           | IN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANT                       | ΓΥ,         |
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| THE INFORMATION GIVEN HERE                                | IN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANT<br>ADE.               | ΓY,         |

#### DESCRIPTION

A heavy-duty, industrial strength cleaner-degreaser designed for the removal of grease, oil and carbonized grease from concrete, brick, quarry tile, terrazzo, plastic and many metal surfaces. Contains emulsifiers, alkaline builders and degreasers for fast action even at high dilutions.

- Non-Flammable.
- Non-Corrosive.
- # Phosphate Free.
- Solventized for Fast Action.
- Non-Toxic.
- Biodegradable.

Precautions should be taken before using on glass surfaces, painted surfaces, resilient tile and aluminum or magnesium. Experiment with various dilutions in an inconspicuous area before using product on these surfaces.

#### PRECAUTIONARY STATEMENTS

#### WARNING

CONTAINS SODIUM HYDROXIDE AND 2-BUTOXYETHANOL.

Avoid contact with eyes and skin by wearing chemical splash goggles, chemical resistant gloves and clothing when handling concentrate. Do not take internally. Avoid prolonged breathing of vapors of sprayed product. Use only in well ventilated areas.

CONSULT OSHA MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT.



# **HEAVY DUTY DEGREASER**

FOR INDUSTRIAL AND INSTITUTIONAL USE ONLY

# Warning!

ALKALINE MATERIAL. MAY CAUSE EYE AND SKIN IRRITATION. HARMFUL IF SWALLOWED.

KEEP OUT OF THE REACH OF CHILDREN

(See Additional Precautions on Side Panel)



3516 N. 14th Street 
St. Louis, Mo. 63107
314-436-1300

#### DIRECTIONS FOR USE

Dilutions may vary according to severity of soil, type of surface to be cleaned, cleaning method used and other factors. Therefore, the following dilutions are given as a general guideline only. The user should experiment with various dilutions to find the one most effective and economical.

LIGHT SOIL: Dilute with 256 parts water (½ oz. per gallon). Daily floor maintenance, pressure washing, etc.

MEDIUM SOIL: Dilute with 64 parts water (2 oz. per gallon). Walls, appliances, range hoods, etc.

HEAVY SOIL: Dilute with 16 parts water (8 oz. per gallon). Oil and grease build-ups on machinery, periodic cleaning of corners, etc.

For carbonized grease or oil, or aged build-ups use in a 1:1 dilution.

Apply with a conventional sprayer, with mop or by flooding. Rinse with clear water.

#### FIRST AID

EYES: Flush with water for at least 15 minutes while holding upper and lower lids open. Get medical attention. SKIN: Rinse thoroughly with water followed by a neutralizer or vinegar, INTERNAL: Do not induce vomiting. Drink 2 glasses of water followed by fruit juice. Get medical attention immediately.

CONSULT OSHA MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT.

1/90

INTERCHEM. INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300 EFFECTIVE DATE:3-7-88 PRODUCT CODE:201 PRODUCT NAME: FORMULA 700 3 MSD:201-4 HAZARDOUS INGREDIENTS (TYPICAL VALUES -- NOT SPECIFICATION) :1-5% ; SODIUM METASILICATE VARIOUS SURFACTANTS :1-5% : Section 1 Physical Data Boiling Point: 200-225 F. Sol. In Water: COMPLETE Vap. Press. (mmHo @ 25°C):NASo. Gravity (@25/25°C):1.012Vap. Density (Air = 1):NA% Volatile by Volume:95.7% incldg. H20 Appearance and Odor: CLEAR, BLUE LIQUID. WATER-LIKE VISCOSITY. LOW ODOR. Section 2 Fire and Explosion Hazard Data Flash Point: NONE Flammable Limits: <u>Method Used:</u> TCC LFL (% Vol): NA UFL (% Vol):NA Extinouishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE. Special Fire Fighting Equipment and Hazards: NONE KNOWN. Section 3 Reactivity Data Stability: STABLE Incompatibility: STRONG ACIDS AND OXIDIZERS. <u>Hazardous Decomposition Products:</u>CARBON\_DIOXIDE, CARBON\_MONOXIDE\_WHEN\_EXPOSED TO EXTREMELY HIGH TEMPERATURES. Hazardous Polymerization: WILL NOT OCCUR. Section 4 Spill, Leakage, and Disposal Procedures Action to be taken for Spills (Use Appropriate Safety Equipment):FLUSH WITH LARGE AMOUNTS OF WATER. Disposal Method: CONSULT FEDERAL, STATE AND LOCAL REGULATIONS.

# MATERIAL SAFETY DATA SHEET

| INTERCHEM, INC. ST. LOUIS, MO. 63107                                                                                            | EMERGENCY PHONE: (314)436-1300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| EFFECTIVE DATE: 3-7-88                                                                                                          | PROPURT CODE:201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PRODUCT NAME: FORMULA 700                                                                                                       | <u>MSD:</u> 201-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Section 5 Health Ha                                                                                                             | izard Data Effect of Overexposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Indestion: MAY CAUSE MODERATE TO SEVERE GAUPON AMOUNT INGESTED.                                                                 | STROINTESTINAL IRRITATION DEPENDING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Eve Contact: MAY CAUSE MODERATE EYE IRRITAT                                                                                     | ION AND IRRITATION OF SURROUNDING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skin Contact: MAY CAUSE MODERATE SKIN IRRIT                                                                                     | ATION, REDNESS, DRYNESS, ITCHING.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skin Absorption: WILL NOT OCCUR.                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Inhalation: EXCESSIVE INHALATION MAY CAUSE                                                                                      | NAUSEA, DIZZINESS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Section 6 First F                                                                                                               | lid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Eyes: FLUSH WITH LARGE AMOUNTS OF WATER FO<br>UPPER AND LOWER LIDS OPEN. GET MEDICAL AT                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Skin: FLUSH WITH LARGE AMOUNT OF WATER. IRRITATION IS EVIDENT GET MEDICAL ATTENTION                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Inhalation:</u> REMOVE PERSON TO FRESH AIR. 3  OXYGEN. GET MEDICAL ATTENTION.                                                | F BREATHING IS DIFFICULT ADMINISTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Ingestion: DRINK 2 GLASSES OF WATER OR MIL<br>FINGER TO BACK OF THROAT. KEEP HEAD<br>MATERIAL INTO LUNGS. GET MEDICAL ATTENTION | BELOW HIPS TO PREVENT ASPIRATION CF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| NOTE TO PHYSICIAN:                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Eyes:</u>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Skin:                                                                                                                           | The contribution of the co |
| Respiratory:                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Oral:                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Systemic:                                                                                                                       | Personal Commission (1999) and disself deal collection of the coll |
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INTERCHEM, INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300 EFFECTIVE DATE: 3-7-88 PRODUCT CEDE:201 PRODUCT NAME: FORMULA 700 MSD:201-4 Special Handling Information Section 7 Respiratory Protection: NONE REQUIRED FOR NORMAL USE. Protective Clothing: WEAR CHEMICAL-RESISTANT GLOVES. Eye Protection: SAFETY GLASSES OR CHEMICAL SPLASH GOGGLES. Section 8 Special Precautions and Additional Information Precautions to be Taken in Handling and Storage: TREAT EMPTY CONTAINERS AS IF THEY WERE FULL DUE TO PRESENCE OF PRODUCT RESIDUE. Additional Information: CONSULT INTERCHEM, INC. FOR FURTHER INFORMATION. THE INFORMATION GIVEN HEREIN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

#### DIRECTIONS:

Floors, Walls and Appliances. Apply a 1-15 dilution. let stand 30 seconds, then wipe off.

Washable Fabrics: Apply concentrate to stain, add garment to washload

Ovens, Barbeques, Range hoods and Ventilators: Cold apply 1.1 dilution with water, let stand 5 minutes flush away. Where a hot solution (150°F) can be applied, use at a 1.4 dilution. Let set 5 minutes, then wipe off.

Flooring, Ducts, Grills, Light Fixtures and Walls: Use a 1-15 dilution

Ceramic Tite and Porcetain: Use a 1-15 dilution for tubs, floors and lavatories

**Dewaxing** Apply a 1-4 dilution let soak 5-10 minutes scrub and ruise away

#### WARNING:

KEEP OUT OF REACH OF CHILDREN.

Contains metasilicate. Concentrate may be harmful if swallowed may cause burns of the eye and skin.

FIRST AID: Contact — flush affected areas with free flowing water, then wash with vinegar or dilute boric acid solution. Ingestion — administer acid fruit juices or slightly dileted vinegar, follow with a dose of milk. Call a physician.



# Formula 100

## LIQUID ALL PURPOSE CLEANER

WARNING. KEEP OUT OF REACH OF CHILDREN
See Side Panel for Additional Information

For Institutional and Industrial use only

Manufactured By

# nterchem inc.

3516 N. 14th Street B St. Louis, Mo. 63107

Area Code 314 436-1300

A HEAVY DUTY, ALL PURPOSE, INDUSTRIAL STRENGTH CLEANER FOR REMOVING CARBONIZED GREASE AND OIL, INK, GUM AND SOAP SCUMS, MAY BE USED ON CEMENT, QUARRY TILE, TERRAZZO, PLASTIC AND METAL SURFACES.

- SOLVENTIZED FOR FAST ACTION
- NON-FLAMMABLE
- NON-TOXIC
- CAN BE SPRAYED, MOPPED OR WIPED ON
- FREE RINSING
- LEAVES STAINLESS STEEL SPARKLING
- **M** CLEANS VENTILATORS
- DEGREASES KITCHEN SURFACES
- ERADICATES HEEL, CRAYON AND LIPSTICK MARKS
- DISSOLVES WAX BUILD-UPS
- ACTS AS A LAUNDRY AID
- DEWAXES RESILIENT AND MINERAL FLOORS

214071M

#### CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - CCPC-00-0335

Spill, Leakage, and Disposal Procedures

MATERIAL Pape: 1 63107 EMERGENCY FHONE: (314)435-1300 ST.LOUIS, MO. EFFECTIVE DATE:7-20-89 PRODUCT CCDE: 780 PRODUCT NAME: "ORANGE CLEANER-DEGREADER" 760 3 MSD: 760-1 HAZARDOUS INGREDIENTS (TYPICAL VALUES -- NOT SPECIFICATION) 4-ISDPROPENYL- 1-METHYLCYCLOHORANGE DISTILLATE Physical Data Section 1 Boiling Point: 130.0 deg.C. Sol. In Water: FORMS EMULSION. Vap. Press. (mmHg @ 25°C):NA So. Gravity (025/25°C): 936 Vap. Density (Air = 1):NA % Volatile by Volume:83.25%inclds.H20. Appearance and Odor: CLEAR, YELLOW OR DRANGE, LOW VISCOSITY LIQUID WITH SWEET, CITRUSY ODOR. Section 2 Fire and Explosion Hazard Data Flash Point: NONE Flammable Limits: Method Used: T.C.C. LFL (% Vol):NA UFL (% Vol):NA Extimulishing Media: DRY CHEMICAL, CO2, WATER FOG, FOAM. Special Fire Fighting Equipment and Hazards: IF LARGE AMOUNT IS INVOLVED USE = NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS OPERATED IN A POSITIVE PRESSURE MODE. COOL FIRE EXPOSED CONTAINERS WITH WATER STREAM. Section 3 Reactivity Data Stability: STABLE Incompatibility: AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS. Hazardous Decomposition: Products:CARBON MONOXIDE AND UNIDENTIFIED ORGANIL COMPOUNDS MAY BE FORMED DURING COMBUSTION. Hazardous Polymerization: WILL NOT OCCUR.

Section 4

| SUITABLE FOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u>e taken for Sc</u><br>ERIAL SUCH AS<br>DISPOSAL. 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INTERCHEM, INC. ST.LOUIS. MO. 63107 EMERGENCY PHONE: (314)436-1300 PRODUCT CODE:760 EFFECTIVE DATE:7-20-89 PRODUCT NAME: "ORANGE CLEANER-DEGREASER" MSD:760-8 Health Hazard Data -- Effect of Overexposure Section 5 Indestion: VOMITING. ASPIRATION PNEUMONITIS. Eve Contact: MAY CAUSE MINIMAL IRRITATION TO EYE AND SURROUNDING TISSUE. Skin Contact: MAY CAUSE MILD SKIN IRRITATION. PROLONGED OR REPEATED EXPOSURE CAN CAUSE SKIN DEFATTING AND DRYING. Skin Absorption: WILL NOT OCCUR. Inhalation: MAY BE IRRITATING TO NOSE, THROAT AND UPPER RESPIRATORY TRACT. HIGH VAPOR CONCENTRATIONS MAY CAUSE CNS DEPRESSION. Section 6 First Aid Eyes: FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING UPPER AND LOWER LIDS OPEN. IF IRRITATION IS EVIDENT GET MEDICAL ATTENTION. Skin: REMOVE CONTAMINATED CLOTHING, WASH EXPOSED AREA WITH PLENTY OF WATER. FOLLOW WITH WASHING WITH SOAP AND WATER. IF IRRITATION IS EVIDENT GET MEDICAL ATTENTION. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. Inhalation: MOVE PERSON TO FRESH AIR AND ADMINISTER OXYGEN IF NECESSARY.GET MEDICAL ATTENTION. Ingestion: DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF MATERIAL INTO LUNGS. GET MEDICAL ATTENTION. NOTE TO PHYSICIAN: Eyes: and the second s Skin: Respiratory: Oral: and a column and white - I for the column and applicate the columns and accompanies and accompanies of the column and the column and the column and the columns and the column and the columns are columns and the columns and the columns are columns and the columns and the columns are columns and the columns are columns and the columns are columns and the columns and the columns are Systemic:

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INTERCHEM, INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300 EFFECTIVE DATE:7-20-89 PRODUCT CODE:760 PRODUCT NAME: "ORANGE CLEANER-DEGREASER" MSD: 760-3 Special Handling Information Section 7 MECHANICAL VENTILATION AS REQUIRED TO CONTROL VAPOR Ventilation: USE CONCENTRATIONS. Respiratory Protection: NONE REQUIRED FOR NORMAL USE OF PRODUCT. OVEREXPOSURE IS EXPECTED, USE A NIOSH APPROVED RESPIRATOR. Protective Clothing: WEAR | CLOTHING APPROPRIATE TO MINIMIZE EXCESSIVE EXPOSURE TO SKIN. Eye Protection: WEAR SAFETY GLASSES AS APPROPRIATE TO MINIMIZE EXPOSURE. Section 8 Special Precautions and Additional information Precautions to be Taken in Handling and Storage: STORE AWAY FROM HEAT AND FLAME. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. TREAT EMPTY CONTAINERS AS IF THEY WERE FULL DUE TO PRESENCE OF PRODUCT RESIDUE. Additional Information: CONSULT INTERCHEM, INC. FOR FURTHER INFORMATION. THE INFORMATION GIVEN HEREIN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANTY, EXPRESSED OR IMPLIED. IS MADE.

#### JESCRIPTION

An industrial strength cleaner/degreaser formulated with all natural ingredients, including 100% biodegradable surfactants and d-Limonene organic citrus solvent.

Can be safely used to clean oil, grease, dirt and grime from all types of porous and nonporous surfaces, including concrete, painted and metal surfaces, brick, tile, wood, porcelain and any surface where the use of soaps and solvents would normally be acceptable.

- 100% Biodegradable
- Fresh orange scent provides instant deodorizing
- Non-Corrosive
- Non-Combustible
- Does not contain butyl solvents, petroleum distillates, acids, alkalies, phosphates.

#### CAUTION

Strong solvent action may defat skin and cause irritation. May cause eye irritation. Avoid contact with skin and eyes by wearing chemical resistant gloves and splash goggles. DO NOT TAKE INTERNALLY. Avoid prolonged breathing of vapors in non-ventilated areas.



# CLEANER DEGREASER

## 100% NATURAL

**CAUTION!** Do not drink this product. May cause skin irritation with prolonged or repeated contact. May cause eye irritation. See side panel for additional information.

FOR INDUSTRIAL AND INSTITUTIONAL USE ONLY



3516 N. 14th Street & St. Louis, Mo. 63107 314-436-1300

#### DIRECTIONS For DUSC

Apply diluted product with a cloth, mop, brush, sponge or mechanical spray device. Allow product to stand for approximately 1 minute. Agitate or scrub wet surface until all soil is completely emulsified. Rinse with clear water and let dry.

LIGHT CLEANING: Dilute 1 to 4 ounces of product with water to make 1 gallon. MEDIUM CLEANING: Dilute 5 to 10 ounces

of product with water to make 1 gallon. HEAVY CLEANING/DEGREASING: Dilute 20 to 40 ounces of product with water to

make 1 gallon. HEAVY DEGREASING: Dilute product with

equal amount of water.

CLEANING/DEODORIZING DRAINS, GREASE TRAPS, SEPTIC TANKS: Use undiluted. Pour 1 pint to 1 gallon directly in drain or trap and allow to stand for as long as possible before flushing with hot water (30 minutes minimum).

#### **FIRST AID**

SKIN: Flush with large amount of water. EYES: Flush with large amount of water for 15 minutes, holding upper and lower eyelids open. Get medical attention. INTERNAL: Rinse mouth quickly and drink 2 glasses of water. Get medical attention immediately.

CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

5/89

|                                                                                                                                      | CERRO COPPER PRODUCTS COMPANY<br>MSDS NUMBER - COPC-00-0336                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                      |                                                                                                                     |
|                                                                                                                                      |                                                                                                                     |
| MATERIAL                                                                                                                             | SAFETY DATA SHEET Page: 1                                                                                           |
| INTERCHEM, INC. ST.LOUIS, MO.                                                                                                        | 63107 EMERGENCY P-GNR: (314)436-1300                                                                                |
| <u>EFFECTIVE DATE:</u> 7-20-89                                                                                                       | <u>PRODUCT CODE:</u> 780%                                                                                           |
| FRODUCT NAME ! ORANGE CLEANER DEGRE                                                                                                  | 3853" 760A 3 MSD:7600-2                                                                                             |
| HAZARDOUS INGREDIENTS (TYPICAL VAL<br>4-ISOPROPENYL- 1-METHYLCYCLOHEXENS<br>ETHYLENE GLYCOL MONOBUTYL ETHER<br>ISOPROPYL ALCOHOL 99% |                                                                                                                     |
| Section 1                                                                                                                            | Physical Data                                                                                                       |
| Boiling Point: 130.0 deg.C.  Vap. Press. (mmHg & 25°C): NA  Vap. Density (Air = 1): NA                                               | Sol. In Water:FORMS EMULSION.  So. Gravity (925/25°C):.908  7 Volatile by Volume:90.35%inclop.H20                   |
| Appearance and Odor: CLEAR, YELLOW, JDOR.                                                                                            | LOW VISCOSITY LIQUID WITH SWEET, CITAUS?                                                                            |
| Section 2                                                                                                                            | Fire and Explosion Hazard Data                                                                                      |
| Flash Point:NONE  Method Used:T.C.C.                                                                                                 | Flammable Limits:<br>LFL (% Vol):NA DFL (% Vol):NA                                                                  |
| <u>Extinouishing Media:</u> DRY CHEMICA                                                                                              | st, tue, while hub, hubm.                                                                                           |
| Special Fire Fightims Equipment ar<br>NIOSH-APPROVED BELF-CONTAINED BE<br>PRESSURE MODE. COOL FIRE EXPOSED C                         | d Fazards: IF LARGE AMOUNT IS INVOLVED USE PREATHING APPARATUS OPERATED IN A POSITIVE CONTAINERS WITH WATER STREAM. |
| Section 3                                                                                                                            |                                                                                                                     |
| Stability: STABLE                                                                                                                    |                                                                                                                     |
| <u>Incompatibility:</u> AVDID REAT, FLAME                                                                                            | AND CONTACT WITH STRONG OXIDIZING AGENTS.                                                                           |
| Hazardous Decomposition Products COMPOUNDS MAY BE FORMED DURING COM                                                                  | S:CARBON MONOXIDE AND UNIDENTIFIED ORGANIC                                                                          |
| <u> Hazardous Folymerization:W</u> ILL NOT                                                                                           | GCCUR.                                                                                                              |

| MATERIAL SAFETY DATA SHEET                                                                                                                                                  | <b>ពិ</b> ឧត្តម 🗀                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| INTERCHEM. INC. ST.LOUIS, MO. 63107 EMERGENCY PHONE:                                                                                                                        | (3:4)438-1300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <u>EFFEUTIVE DAME:</u> 7-20-89                                                                                                                                              | <u>- 1912-1912   194</u> 2-1944   1942-1944   1942-1944   1942-1944   1942-1944   1942-1944   1942-1944   1942-1944                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| PRODUCT NAME: "CRANGE CLEANER-DEGREASER"                                                                                                                                    | <u>750:</u> 7608-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Section 5 Health Hazard Data Effe                                                                                                                                           | ct of Ovenexposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <u>Incestion:</u> VOMITING. ASPIRATION PNEUMONITIS.                                                                                                                         | · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Eye Contact: MAY CAUSE MINIMAL IRRITATION TO EYE AND SURROUN                                                                                                                | DING TISSUE,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <u>Skin Contact:</u> MAY CALSE MILD SKIN IRRITATION. PROLONGED OR CAN CAUSE SKIN DEFATTING AND DRYING.                                                                      | REPEATED FXPCS. FE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Skin Absorption: WILL NOT OCCUR.                                                                                                                                            | The second secon |
| <u>Inhalation:</u> MAY BE IRRITATING TO NOSE, THROAT AND UPPER HIGH VAPOR CONCENTRATIONS MAY CAUSE ONS DEPRESSION.                                                          | REBRIRATORY TRADI.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Section 6 First Aid                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Eyes:</u> FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MIN<br>UPPER_AND_LOWER_LIDS_OPENIF IRRITATION IS EVIDENT GET MED                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Skin: REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH FOLLOW-WITH-WASHING WITH SOAP AND WATER. IF IRRITATION IS ATTENTION. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Inhalation: MOVE PERSON TO ERESH AIR AND ADMINISTER OXYGEN</u> MEDICAL ATTENTION.                                                                                        | L_IE_NECESSARY.GET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <u>Indestion:</u> DO-NOT-INDUCE VOMITING. IF VOMITING OCCURS SPONTA<br>BELOW HIPS TO PREVENT ASPIRATION OF MATERIAL INTO L<br>ATTENTION.                                    | NNEOUSLY, KEEP HERD<br>LUNGS. GET MEDICAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NOTE TO PHYSICIAN:                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u> </u>                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <u>Skimi</u>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Respiratory:                                                                                                                                                                | The state of the s |
| <u>Gral:</u>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Systemic:                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| WHIEKIHE PHEELY DHIH PHEE!                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INTERCHEM, INC. ST.LOUIS. NO. 63107 EMERGENCY P-ONE: (314:436-1300                                                                                                                                              |
| SEFFECTIVE DATE:7-80-89                                                                                                                                                                                         |
| PRODUCT NAME: "ORANGE CLEANER-DEGREASER" YSD:7608-2                                                                                                                                                             |
| Section 7 Special Handling Information                                                                                                                                                                          |
| <u>Ventilation:</u> USE MECHANICAL VENTILATION AS REQUIRED TO CENTROL VAPIR CONCENTRATIONS.                                                                                                                     |
| Respiratory Protection:NONE REQUIRED FOR NORMAL USE OF PRODUCT. IF OVEREXPOSURE IS EXPECTED, USE A NICSH APPROVED RESPIRATOR.                                                                                   |
| Protective Clothing: WEAR CLOTHING APPROPRIATE TO MINIMIZE EXCESSIVE EXPOSURE TO SKIN.                                                                                                                          |
| Eve Protection: WEAR SAFETY GLASSES AS APPROPRIATE TO MINIMIZE EXPOSURE.                                                                                                                                        |
| Section 8 Special Precautions and Additional Information                                                                                                                                                        |
| Precautions to be Taken in Hancling and Stonage:STORE AWAY FROM HEAT AND FLAME. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. TREAT EMPTY CONTAINERS AS IF THEY WERE FULL DUE TO PRESENCE OF PRODUCT RESIDUE. |
| Additional Information: CONSULT INTERCHEM. INC. FOR FURTHER INFORMATION.  THE INFORMATION GIVEN HEREIN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANT:, EXPRESSED OR IMPLIED, IS MADE.                          |
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# CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - COPC-00-0337 -FFECVACES

63107 EMERGENCY PHONE: (314)436-1300 INTERCHEM. INC. ST. LOUIS. MO. PRODUCT LIDE: BIG EFFECTIVE DATE: 2-4-88 79D:210-4 DREDGET <u>NAME:</u>RPM II HAZARDOUS INGAEDIENTS (TYPICAL VALUES -- NOT SPECIFICATION) 1-5% SODIUM HYDROXIDE 1-5% SODIUM METASILICATE Physical Data Section 1 Sol. In Water: COMPLETE Boiling Paint: 220 F. Vao. Press. (mmHo @ 25°C):NA Sp. Gravity (025/2590):.992 Vap. Density (Air = 1):NA % Volatile by Volume: 92.48% inclop. H20 Appearance and Odor: CLEAR. WATER-LIKE VISCOSITY. AMBER COLORED LIQUID. ETHEREAL ODOR. Fire and Explosion Hazard Data Section 2 Flash Point:NONE Flammable Limits: LFL (% Vol):NA UFL (% Vol):NA Method Used:TCC Extinouishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE. Special Fire Fighting Equipment and Hazards:NONE Section 3 Reactivity Data Stability: STABLE Incompatibility: STRONG OXIDIZERS. Hazardous Decomposition Products: AT HIGH TEMPERATURES, CARBON DIOXIDE AND OXIDES OF SULPHUR. dazandous Polymenization: WILL NOT OCCUR. Section 4 Spill, Leakage, and Disposal Procedures Action to be taken for Spills (Use Appropriate Safety Equipment): OBSERVE ALL HANDLING PRECAUTIONS CONTAINED IN THIS MSDS. MOP UP AS MUCH MATERIAL AS FOR LARGE SPILL, ABSORB WITH INERT FLUSH REMAINDER WITH WATER. MATERIAL AND TRANSFER TO CONTAINER SUITABLE FOR TRANSPORTATION TO DISPOSAL SITE, FLUSH RESIDUE WITH WATER. Disposal Method: CONSULT FEDERAL, STATE AND LOCAL REGULATIONS.

### MATERIAL SAFETY DATA SHEET

| INTERCHEM. INC. ST.LOUIS. MG. 63107 EMERGENCY PHONE: (314)436-1300                                               |
|------------------------------------------------------------------------------------------------------------------|
| EFFECTIVE DATE:E-4-98                                                                                            |
| PRODUCT NAME:RPM II MED:BIG-4                                                                                    |
| Section 5 Health Hazard Data Effect of Overexposure                                                              |
| Indestion: MAY CAUSE SEVERE IRRITATION AND BURNS TO GASTROINTESTINAL TRACT.                                      |
| <u>Eve Contact:</u> SEVERE EYE IRRITATION AND\OR EYE BURNS MAY OCCUR DUE TO ALKALINE NATURE OF MATERIAL.         |
| Skin Contact: MODERATE TO SEVERE IRRITATION MAY OCCUR DEPENDING ON AMOUNT AND LENGTH OF EXPOSURE.                |
| Skin Absorbtion: WILL NOT OCCUR.                                                                                 |
| <u>Inhalation:</u> NO EFFECTS LIKELY UNLESS MATERIAL IS SPRAYED OR ATOMIZED IN AREA WITH INADEQUATE VENTILATION. |
| Section 6 First Aid                                                                                              |
| Eyes: FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES                                      |
| HOLDING UPPER AND LOWER EYELIDS OPEN. CALL A PHYSICIAN.                                                          |
| Skin: WASH WITH LARGE AMOUNT OF WATER. REMOVE CONTAMINATED CLOTHING BEFORE RE-                                   |
| USE. IF IRRITATION IS EVIDENT CALL A PHYSICIAN.                                                                  |
| Inhalation: MOVE PERSON TO FRESH AIR. IF BREATHING IS DIFFICULT ADMINISTER                                       |
| OXYGEN. CALL A PHYSICIAN.                                                                                        |
| Indestion: IF SIGNIFICANT AMOUNTS HAVE BEEN INGESTED CALL A PHYSICIAN                                            |
| IMMEDIATELY. GIVE LARGE AMOUNTS OF WATER OR MILK TO DRINK FOR DILUTION. DO<br>NOT INDUCE VOMITING.               |
| NOTE TO PHYSICIAN:                                                                                               |
| Eves:                                                                                                            |
| Skin:                                                                                                            |
| Respiratory:                                                                                                     |
| Oral:                                                                                                            |
| Systemic:                                                                                                        |
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| INTERCHEM, INC. ST. LOUIS, MO. 63107 EMERGENCY PHONE: (314)436-1300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ERREDUIVE DATE: 2-4-88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ARDDUCT NAME:RPM II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Section 7 Special Handling Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Ventilation:LOCAL VENTILATION IS ADEQUATE FOR NORMAL USE OF PRODUCT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Respiratory Protection: NONE REQUIRED FOR NORMAL USE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Protective Clothing: WEAR CHEMICAL RESISTANT GLOVES SUCH AS RUBBER OR NEOPRENE AND CHEMICAL RESISTANT CLOTHING AS NECESSARY TO MINIMIZE CONTACT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Eve Protection: SAFETY GLASSES WITH SIDE SHIELDS OR CHEMICAL SPLASH GOGGLES.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Section 8 Special Precautions and Additional Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Precautions to be Taken in Handling and Storage: TREAT EMPTY CONTAINERS AS IF THEY WERE FULL DUE TO PRESENCE OF PRODUCT RESIDUE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Additional Information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| CONSULT INTERCHEM. INC. FOR FURTHER INFORMATION.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| THE INFORMATION GIVEN HEREIN IS PROVIDED IN GOOD FAITH. HOWEVER, NO WARRANTY,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| EXPRESSED OR IMPLIED. IS MADE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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#### CERRO COPPER PRODUCTS COMPANY MBDE NUMBER - CCFC-80-8338

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ELWIRINGATALELL FRIGROLL FRIGR

### MATERIAL SAFETY DATA SHEET

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|---------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|-------------|----------------|
| SECTION 1 PRODUCT IDENTIFICATION                                                                                    | <b>3</b>                   |             |             | ,              |
| Product Name: TERFENE-D                                                                                             | 3                          | <u></u>     |             |                |
| Synomyms: Orange Terpenes                                                                                           | <u> </u>                   |             |             |                |
| Chemical Family: Solvents                                                                                           |                            | <del></del> |             |                |
| SECTION 2 COMPONENTS                                                                                                |                            | · ·         |             | •              |
| Ingredient(s)                                                                                                       | CAS No                     | 8           | PEL         | TLV            |
| 4-isopropenyl-1-methylcyclohexene                                                                                   | 5989-27-5                  | 99%         | NE          | NE             |
| SECTION 3 PHYSICAL DATA :                                                                                           |                            |             | <u> </u>    | <u></u>        |
| Appearance and Odor Clear, color-<br>less liquid with citrusy odor.                                                 | Specific Gra<br>0.84 @ 2   |             |             |                |
| Boiling Point<br>310 F                                                                                              | Vapor Densit               | y in Air    | (Air=1)     |                |
| Vapor Pressure<br>lmm 0 20 C                                                                                        | % Volatile,<br>100%        | by Volu     | ime         | , ,            |
| Evaporation Rate Considered slow                                                                                    | Solubility in<br>Insoluble | Water       | •           | -              |
| SECTION 4 REACTIVITY DATA                                                                                           |                            |             |             | •              |
| Stability Stable at room temperature                                                                                | e                          |             | <del></del> | <del></del> ,, |
| Conditions to Avoid Avoid strong of                                                                                 | xidizing agent             | s           | <del></del> | ·              |
| Incompatibility (Materials to avoid)  Avoid strong oxidizing agents                                                 |                            |             | ,           |                |
| Mazardous Decomposition Products<br>None Known                                                                      |                            |             |             | <del></del>    |
| lazardous Polymerization<br>Polymerization catalysts such as                                                        | Λluminum Chlo              | ride        |             |                |

- And the best of 
SECTION 5 FIRE AND EXPLOSION DATA

Flash Point (Method Used);

119 F (TCC)

Flammable Limits in Air:

302 F

Extinguishing Agents:

Dry powder, foam, CO2

Unusual Fire and Explosion Hazards:

Class B fire procedures.

Cumbustible liquid, keep from heat, sparks and open flame.

SECTION 6 TOXICITY AND FIRST AID

Exposure Limits: Harmful if swallowed. May cause eye damage. Can cause skin irritation. FEMA-GRAS; FDA-GRAS. RIFM lists acute oral LD50 (rat) >5g/kg. Acute dermal LD50 (rat) >5g/kg. Irritation-mild irritation-none in 10% petrolatum. Sensitazation-none in 10% petrolatum.

Medical Conditions Aggravated by Exposure:

May aggravate dermititis

Acute Toxicity:

Can cause eye damage and skin irritation with overexposure. Inhalation may cause nausea.

#### First Aid:

SKIN: Remove contaminated clothing. Wash affected area with copious amounts of soap and water.

EYES: Remove contact lenses. Flush with water X 30 min. See physician if irritation persists.

INGESTION: Do not induce vomiting. Drink milk or water to dilute.

Contact physician immediately.

Chronic Toxicity:

Data not available at this time.

SECTION 7 PERSONAL PROTECTION AND CONTROLS

Respiratory Protection:

Not normally required. If vapor concentration becomes high, use self contained air mask.

Ventilation:

Local exhaust is adequate.

Skin Protection

Standard industrial type rubber gloves.

EYE PROTECTION

Chemical splash goggles or face shield suggested.

Hygiene

A STATE OF THE PARTY OF THE PAR

Wash hands thoroughly after handling.

Other Control Measures Usually not required.

SECTION 8 STORAGE AND HANDLING PRECAUTIONS

Usual precautions for combustible liquids.

All handling equipment should be electrically grounded.

SECTION 9 SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be taken in case material is released or spilled.

Small spills should be absorbed by dirt, sand or other suitable absorbents for disposal. Large spills can be diked with Earth, then pumped to tank truck for disposal. Clean the area with soapy water.

Waste disposal method

Disposal in landfill approved for same, away from water supplies. Burning is an alternate method. Observe local, state and federal, regulations.

SECTION 10 TRANSPORTATION

DOT Hazard Classification Combustionable liquid

Placard Required Combustionable

Label Required Combustionable liquid

FOR FURTHER INFORMATION CONTACT:

INTERCHEM, INC. 3516 North 14th Street St. Louis, Missouri 63107

#### MATERIAL SAFETY DATA SHEET

Keystone Lubricants 900 E. 8TH AVENUE / SUITE 10 ENGISCAMENTAL: (PRICE) KING OF PRUSSIA, PA 19406

CERRO COPPER PRODUCTS COMPAN MEDS NUMBER - COPO-00-0539

REUISION DATE 03-MAY-89

DATE ISSUED 13-MAR-98

### PRODUCT IDENTIFICATION

Keystone Product

DRAW 1575 -27

7 Indicates the Percentage of Graphite)

IMICAL NAME:

cture of Petroleum Scap-based

lase and Graphite

EMICAL FAMILY:

broleum hydrocarbon

ERGENCY TELEPHONE:

30) 822-3659

PRODUCT #:

A2A982A

CAS # 'S:

Mixture

SYNONYMS:

Petroleum Based Grease

CITHER: Chemtrec (800) 424-9300

#### HAZARDOUS INGREDIENTS

1PONENTS:

W/W HAZARD DATA (TLU, LD50, LC50, ETC. ):

leum-based lubricating oil

64742-53-6 or

TLU 5 mg. /meter cubed (as an oil mist)

aphite CAS # 7782-42-5

PEL 15 MPPCF

tty acids, tallow, calcium salts

64755-01-7

64742-52-5

oprietary additives

n/e

ri/e

PARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health

Flammability

Reactivity

1

1

Ū

Recommended by Exxon

ANSPORTATION INCIDENT INFORMATION:

Compound or lubricant. Metal cutting, drawing or drilling.

Dry, liquid or paste. NOI

# PHYSICAL PROPERTIE

2 following data are approximate or typical values and should not be used recise design purposes.

ILING RANGE:

de range

VAPOR PRESSURE: < 0.1 @ 38'C/100'F

### PHYSICAL

CIFIC GRAVITY (25°C/25°C):

1 ? = 1)

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> 8

UAPOR DENSITY (AIR = 1):

ECULAR NEIGHT:

e range

PERCENT VOLATILE BY VOLUME:

Negligible

PORATION RATE @ 1 ATM. AND 25°C

"F) (n-BUTYL ACETATE = 1):

SOLUBILITY IN WATER @ 1 ATM. and 25°C

(77°F):

Negliaible

IR, CONGEALING OR MELTING POINT:

FREEZING POINT:

n/e

PEARANCE AND ODOR:

·u Gel, Petroleum Odor

### AND

ASH POINT (MINIMUM):

AUTOIGNITION TEMPERATURE:

3'C (320'F) Test method:

N/E

FIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:

lealth 1

Flammability Reactivity

Basis Recommended by Exxon

A BLE OR EXPLOSIVE LIMITS (approximate percent by volume in air): imated values: lower 1%

finguishing media and fire fighting procedures:

em, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid e extinguishing agents may all be suitable for extinguishing fires involving is type product, depending on size or potential size of fire and circumstances lated to the situation. Plan fire protection and response strategy through isultation with local fire protection authorities or appropriate specialists.

a following procedures for this type of product are based on the commendations in the National Fire Protection Association's "Fire Protection de on Hazardous Materials", Eighth Edition (1984):

: water spray, dry chemical, foam, or carbon dioxide. Nater or foam may cause othing. Use water to keep fire-exposed containers cool. Water froth may be d to flush spills away from exposure. Minimize breathing gases, vapor, les, or decomposition products. Use supplied-air breathing equipment for :losed or confined spaces or as otherwise needed.

JSUAL FIRE AND EXPLOSION HAZARDS:

#### 1PTY" CONTAINER WARNING:

to containers retain residue (liquid or vapor) and can be dangerous. DO ESSURIZE, WELD, CUT BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH (TAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY 'LODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is ficult to remove. "Empty" drums should be completely drained, properly ged, and returned to a drum reconditioner. All other containers should be posed of in an environmentally safe manner and in accordance with

### FIRE AND EXPLOSION DATA

evernment regulations. For work on tanks refer to Occupational Safety and alth Administration regulations, ANSI Z49.1, and other governmental and strial references pertaining to cleaning, repairing, welding, or other process are considered operations.

### REACTIUITY DATA

is product is stable and will NOT react violently with water. Hazardous alymerization will not occur. Avoid contact with strong exidizers such as equid chlorine, concentrated exygen, sodium hypochlorite or calcium spechlorite.

ICOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:

mes, smoke, carbon monoxide and other thermal decomposition products, ich as oxides of carbon in case of incomplete combustion.

DIDVA DT SMOITIGME

en flames.

### SPILL AND LEAK

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

eep product out of sewers and watercourses by diking or impounding. Absorbith sand or inert material. Sweep or scoop up and remove. Prevent spread spill. Advise authorities if product has entered or may enter sewers, atercourses or extensive land areas. Assure conformity with local regulations.

 $\Re$  ] DISPOSAL METHOD: (Consult federal, state, or local authorities for open disposal procedures.)

sure conformity with applicable disposal regulations. Dispose of absorbed sterial at an approved waste site or facility.

### TOXICITY

CAL (Acute)
LD 50 > 5 g/kg (total body weight)
LD 50 > 3.16 g/kg (total body weight)

'E N/E N/E

UHALATION (Acute) N/E
RONIC, SUBCHRONIC, ETC. N/E

dical Conditions Aggravated by Exposure: Unknown

is product does NOT contain any ingredients identified as carcinogenic by :AC, NTP, or OSHA.

### HEALTH HAZARD INFORMATION

POSURE LIMIT FOR TOTAL PRODUCT:

mg/cubic meter for oil mist in air

BASIS:

OSHA Regulation 29 CFR 1910.1000

RYABILITY AMONG INDIVIDUALS:

h studies have shown that many petroleum hydrocarbons and synthetic bricants pose potential human health risks which vary from person to

# HEALTH HAZARD INFORMATION

son. As a precaution, exposure to liquids, vapors, mists, or fumes should minimized.

TS OF OVEREXPOSURE (Signs and symptoms of exposure):
longed or repeated skin contact with this product tends to remove skin oils
sibly leading to irritation and dermatitis; however, based on human
erience and available toxicological data, this product is judged to be
ther a "corrosive" nor an "irritant" by OSHA criteria. Product contacting
eye may cause irritation.

duct has a low order of oral and dermal toxicity. Possible aspiration ard. Induced vomiting may cause aspiration of product into the lungs. e Emergency First Aid Section).

#### I CONTACT:

splashed into the eyes, flush with clear water for 15 minutes or until itation subsides. If irritation persists, call a physician.

#### N CONTACT:

case of skin contact, remove contaminated clothing and wash skin roughly with soap and water.

#### **!ALATION:**

or pressure is very low. Vapor inhalation under ambient conditions is mally not a problem. If overcome by vapor from hot product, immediately love from exposure and call a physician. If breathing is irregular or has speed, start resuscitation; administer oxygen if available. If overexposure oil mist, remove from further exposure until excessive oil mist condition less.

#### :ESTION:

ingested, do not induce vomiting. Call a physician immediately.

# SPECIAL PROTECTION

ITILATION: (Always maintain below permissible exposure limits.)
local exhaust to capture vapor, mist or fumes, if necessary. Provide ater than 60 feet per minute hood face velocity for confined spaces. Vide ventilation sufficient to prevent exceeding recommended exposure it or buildup of explosive concentrations of vapor in air.

PIRATORY PROTECTION: (Use only NIOSH approved equipment.) mally not needed at ambient temperatures. Use supplied air respiratory tection in confined or enclosed spaces, if needed. Use filter, dust, fume, mist respirator type under misting conditions. Use can or cartridge; gas vapor respirator type under conditions exceeding TWA standard.

#### ITECTIVE GLOVES:

chemical-resistant gloves, if needed, to avoid prolonged or repeated skin tact.

#### PROTECTION:

plash goggles or face shield when eye contact may occur.

#### ER PROTECTIVE EQUIPMENT:

chemical-resistant apron or other impervious clothing, if needed, to id contaminating regular clothing which could result in prolonged or eated skin contact.

### SPECIAL PROTECTION

IRK PRACTICES/ENGINEERING CONTROLS:

er containers closed when not in use. Do not handle near heat, sparks, flame, rong oxidants.

#### RSONAL HYGIENE:

nimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact th skin. Remove contaminated clothing; launder or dry-clean before reuse. move contaminated shoes and thoroughly clean before reuse; discard if oil-aked. Cleanse skin thoroughly after contact, before breaks and meals, and end of work period. Product is readily removed from skin by waterless hand eaners followed by washing thoroughly with soap and water.

### SPECIAL PRECAUTIONS

nimum contact with this and all chemicals is recommended as a good neral policy to follow.

EFARED BY: Percy Kanga Product Safety Manager

E ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, NCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO MANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR INTROL, SELLER MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED INTO AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY IN LIFT THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

# Material Safety Data Sheet

Date revised: 10-16-89

LCC Code:N/A

Date entered:10-11-89

LYON CHEMICAL CO., INC. 1381 LUCILE AVENUE MARIETTA, GA 30067

**EMERGENCY PHONE:** 

1-600-622-1944

| (1.)       | Product name:                                                        | DEF                     | OAMER             |        |              | SDS NUM                      | ER PRODU<br>BER - CCF<br>:::49004131   | CTS COMP<br>C-00-034 |
|------------|----------------------------------------------------------------------|-------------------------|-------------------|--------|--------------|------------------------------|----------------------------------------|----------------------|
| (2.)       | Chemical nam                                                         | ie/Synonyms:            | n/a               | • .    | SAFE         | POMMENTAL:<br>Tri<br>HASING: | (5 <b>6.08</b> )<br>(58.08)<br>(58.08) |                      |
| (3.)       | Chemical fami                                                        | ly: DEFOAMI             | NG agent          | •      |              |                              | , ·                                    |                      |
| (4.)       | Chemical form                                                        | nula: n/a               |                   |        |              |                              | •                                      | • • .                |
| (5.)       | NFPA acute h                                                         | azard rating:           |                   |        | :            |                              |                                        |                      |
|            | (6.) health:_                                                        | 0                       | (7.) flammab      | ility: | 0            | (8.) r                       | eactivity:                             | 0                    |
| XXX<br>XXX | SECTION 2 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                        | XXXXXXXXX<br>XXXXXXXXXX | CHEMICAL          | COMP   | OSITIO       | N XXXXX<br>XXXXXXX           | *******<br>******                      | XXXXXX               |
| Ingre      | : list all CERCLA h<br>(1)<br>edient (Chemical Na<br>ntains no hazal | ime)                    | (2)<br>CAS Number |        | (3)<br>Bange | 0.1% or grea<br>(4)<br>PEL   | ter.<br>(5)<br><u>LD50 maka</u>        | (6)<br>Other         |

- (1) Eye Contact: Rinse for 15 minutes with potable water. If irritation persists, seek medical attention.
- (2) Skin Contact: Rinse with water.
- (3) Inhalation: Remove victim to source of fresh air. If symptoms persist, seek medical attention.
- (4) Ingestion: Seek immediate medical attention.
- (5) Special instructions for physician: None



| SECTION 4 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    | XXX PHYSI                   | OLOGICAL EFF      | FECTS XX    | (XXXXXX    | XXXXX            | (XXXXX)           |
|--------------------------------------------------|-----------------------------|-------------------|-------------|------------|------------------|-------------------|
| (1) Primary route(s) of ent<br>(2)X_Skin a       | ry into body:<br>absorption | (3)Innalatio      | n (4)       | _Ingestion | 1                | ÷                 |
| :5) Acute effects:                               |                             |                   |             |            |                  |                   |
| (6) Eyes: Redness,                               | watering.                   |                   | •           |            |                  |                   |
| (7) Skin: Redness                                |                             |                   |             | •          | •                | :                 |
| (8) Inhalation: Irrita                           | tion.                       | •                 | ٠           |            |                  | ·                 |
| (9) Ingestion: Naus                              | sea.                        |                   | ?           |            | •                |                   |
| XX SECTION 5 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | CCUPATIO                    | NAL CONTROL       | L PROCEI    | URES X     | (XXXX)<br>(XXXXX | (XXXXX<br>(XXXXX) |
| (5) Personal protective e                        | quipment: no                | ne required       |             |            |                  |                   |
| (6) Respirate                                    | or type: Non                | e required        | • •         |            |                  | :                 |
| (7) Gloves:                                      | (8)                         | _Natural rubber   | (9)         | _Plastic   | (10)             | Nitri             |
| ·                                                | (11) <u>X</u>               | _Neoprene         | (12)        | _Butyl     | (13)             | Othe              |
| (14) Eye protection:                             | (15) <u>X</u>               | _Glasses with s   | ide shields |            |                  |                   |
|                                                  | (16)                        | _Full face shield | ± t         |            |                  | •                 |
|                                                  | (17)                        | Chemical spla     | sh goggles  | <b>3</b>   |                  |                   |
| 4                                                | (18) X                      | Other: none       | •           |            |                  |                   |

| XX SECTION 6 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Appearance/Odor: white emulsion liquid/ No odor                                                                                                                                                                                                                                                                       |
| (2) Physical state: (3) Solid (4)X Liquid (5) Gas                                                                                                                                                                                                                                                                         |
| (6) Boiling point: 130° F (7) Freeze point: n/a , (8) Specific gravity (H <sub>2</sub> O=1): 1.00                                                                                                                                                                                                                         |
| (9) pH (full strength): 7.0 (10) pH (dilution): 7.0 (11) Solubility in water: Complete                                                                                                                                                                                                                                    |
| (12) Vapor pressure: 1.4 mm Hg. @ 25° C (13) Vapor density (air=1): 4.7                                                                                                                                                                                                                                                   |
| (14) Evaporation rate (water=1): 1 (15) Percent volatiles: n/a                                                                                                                                                                                                                                                            |
| XX SECTION 7 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                                                                                                                                                                                                                                                          |
| (1) Flash point: none to boil (2) Method used: T.C.C. (3) Flammable (explosive) limits in air: not known (4) Autoignition temperature: not known (5) Suitable extinguishing media: n/a (6) Hazardous combustion bi-products: None (7) Recommended fire fighting procedures: n/a (8) Unusual fire & explosion hazards: n/a |
| XX SECTION 8 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                                                                                                                                                                                                                                                          |
| (1) Thermal stability: (2)X_Stable (3)_Unstable                                                                                                                                                                                                                                                                           |
| (4) Conditions to avoid: Extreme heat                                                                                                                                                                                                                                                                                     |
| (5) Hazardous decomposition products: n/a                                                                                                                                                                                                                                                                                 |
| (6) Hazardous polymerization: (7) May occur (8)X Will not occur                                                                                                                                                                                                                                                           |
| (9) Conditions to avoid: Extreme heat                                                                                                                                                                                                                                                                                     |
| (10) Incompatibility:  (11) Materials to avoid: oxidizers                                                                                                                                                                                                                                                                 |
| (12) Corrosive action on materials: nil                                                                                                                                                                                                                                                                                   |

| XXXXXXXXXXXXXX                    | (XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                            | rions XXXXX     | (XXXX   | XXXX  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------|---------|-------|
| : Storage: Store                  | at temperatures below 120° F.                                                     |                 | •       |       |
| (2) Handling: Wea                 | r chemical resistant gloves, apron and eye an                                     | d face protecti | on.     |       |
| (3) Precautionary I               | abeling: n/a                                                                      | •               |         |       |
| XXXXXXXXXXXX                      | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                            | XXXXXXX NC      | XXXX    | XXXXX |
| Spill or leak pro<br>(2) Small sp | ocedures:<br>ill/leak: Rinse to drain.                                            |                 | •       | •     |
| (3) Large sp                      | ill/leak: Mop up or absorb. Rinse to drain.                                       |                 | •       | **    |
| (4) Spill rep                     | ortable quantity: none                                                            |                 |         |       |
| :5) Waste disposa                 | I method (including clean-up media): Ship to registered waste disposal site.      | ·               | •       |       |
|                                   | riate waste classification: A or appropriate characteristic waste. If so, EF None | PA hazardous v  | vaste N | 10.   |
| (8)RCR/                           | A or appropriate listed waste. If so, EPA hazar                                   | rdous waste No  | ).      |       |
| (9) X_Non-I                       | RCRA regulated waste.                                                             |                 |         |       |
| (10) Procedure for                | r handling empty containers: rinse thoroughly                                     |                 |         |       |
| (11) Environmenta                 | al toxicity data: biodegradable                                                   |                 |         |       |
| (12) Other regulati               | ory controls:                                                                     |                 |         |       |
| (13) Is mate                      | rial classified under the CLEAN WATER ACT                                         | (USA) or appr   | opriate | water |
| regulations as a:                 | (14) Toxic pollutant (section 307) ?                                              | Yes             |         |       |
|                                   | (15) Hazardous substance (section 311) ?                                          | Yes             |         |       |
| •                                 | (16) If yes, reportable quantity (R.Q.)                                           |                 | lbs. (  | _     |

JN CHEMICAL CO., INC.

| (17) Oil (section 311)?                                                   | Yes XNo                                       |
|---------------------------------------------------------------------------|-----------------------------------------------|
| (18) Is material classified under the CLEAN AIR ACT (US REGULATIONS as a: | A) or appropriate CLEAN AIR                   |
| (19) Hazardous air pollutant (section 12) ?                               | Yes XNo                                       |
| (20) Comments: none                                                       |                                               |
| XX SECTION 11 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                          | QUIREMENTS XXXXXXXX                           |
| (1) Indicate country/regulatory agency which specifies requirer           | nents:                                        |
| XUSA-DOTEurope-ADR/RIDUN                                                  | -IMOUN-ICAO                                   |
| IATA Canada-CTC Other no                                                  | ne ···                                        |
| (2) Proper shipping name: Cleaning compound, liquid, N.O.I.               | B.N.                                          |
| (3) Hazard class: None (4) Identif                                        | ication No. None                              |
| (5) Labels required:Flammable liquidCo                                    | rrosive material                              |
| OtherNone                                                                 |                                               |
| (6) Other requirements: None                                              |                                               |
|                                                                           |                                               |
|                                                                           |                                               |
|                                                                           |                                               |
| •                                                                         |                                               |
| XX SECTION 12 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                         | / <b>////////////////////////////////////</b> |
| XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                    | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX       |

### material safety Data Sneet

| Date revised: 5-16-88                            | Lyon Code: 120                                                     | <u>693</u> , Date e               | nter ed. <u>5-1</u>                | 0-00               |
|--------------------------------------------------|--------------------------------------------------------------------|-----------------------------------|------------------------------------|--------------------|
| LYON CHEMICAL CO., INC                           | •                                                                  | EMERG                             | ENCY PHONE:                        |                    |
| 1391 LUCILE AVE.                                 |                                                                    |                                   |                                    |                    |
| MARIETTA, GA. 30067                              |                                                                    | 1-800                             | -622-1944                          |                    |
|                                                  |                                                                    |                                   |                                    |                    |
| XX SECTION 1 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | RECOLLET INEN                                                      | CXXXXXXXXXXX                      | XXXXXXXXXXX<br><b>XXXXXXX</b> XXXX | XXXXXXX<br>XXXXXXX |
| <u> </u>                                         | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                            | XXXXXXXXXX                        | XXXXXXXXXX                         | XXXXXXX            |
| •                                                |                                                                    | ofako o                           | OPPER PRODUC                       | OTS COMPANY        |
| (1.) Product name: EB                            | -24                                                                | MSDS                              | POD - RABMUV                       | 0-00-0341          |
|                                                  | •                                                                  | ENGLIBOUMED                       | TAL:(FE;[E.                        |                    |
| (2.) Chemical name/Synonyms                      | : Na                                                               | និក់ពីធីពីព្រះ<br>១០ឆ្នាំ១៩៤ពីស៊ី | RRIDRU<br>:RAIDRU                  |                    |
| (3.) Chemical family: alkaline                   | detergent                                                          | ga ga maga ka                     |                                    |                    |
| (4.) Chemical formula: mixture                   | •                                                                  | <u> </u>                          |                                    |                    |
| (5.) NFPA acute hazard rating:                   |                                                                    | •                                 |                                    | •                  |
| (6.) health: 0                                   | (7.) flammability:                                                 | 0                                 | (8.) reactivity:                   | 0                  |
| XX SECTION 2 XXXXXXXXXX                          | xxxxxxxxxxx                                                        | XXXXXXXXXXX                       | (XXXXXXXXXXX                       | XXXXXX             |
| XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          |                                                                    |                                   |                                    |                    |
| XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          | مساخر بالأالب الأبد الشبيا فيسيان بالأب بالأبسان بطاعه اشبها فيبقف |                                   |                                    | XXXXXXX            |
| Note: 1st all CERCLA hazardous substa<br>(1)     | unces at 1% or greater and (2)                                     | cardinogens at 0.1% (3)           | or greater.<br>(4) (5)             | (6)                |
| Ingredient (Chemical Name)                       |                                                                    |                                   |                                    |                    |
| Sodium hydroxide                                 | 1310-73-2                                                          | <1.5 n/a                          | 500                                | n/a                |
| Ethylene diamine tetraacetate,                   | 1                                                                  |                                   |                                    |                    |
| sodium                                           | 64-02-8                                                            | . <4.0 n/a                        | 330                                | n/a                |
| Monopropylene Glycol Methyl                      |                                                                    | -0 E =/=                          | 5710                               | ÷1-                |
| Ether Balance non-hazardous                      | 1589-49-7                                                          | <3.5 n/a<br>>91.0%                | 5710                               | n/a                |
|                                                  |                                                                    | - 0 1,00,0                        |                                    |                    |

- (1) Eye Contact: Rinse for 15 minutes with potable water. If irritation persists, seek medical attention.
- (2) Skin Contact: Rinse with water.
- (3) Inhalation: Remove victim to source of fresh air. If symptoms persist, seek medical attention.
- (4) Ingestion: Seek immediate medical attention.
- (5) Special instructions for physician: None

(16)\_\_\_\_Full face shield

(18) Other: none

\_(17) \_\_\_\_Chemical splash goodes

- (4) Conditions to avoid: extreme heat
- (5) Hazardous decomposition products; not known
- (6) Hazardous polymerization: (7) May occur (8)X Will not occur
  - (9) Conditions to avoid: none
- (10) Incompatibility:
  - (11) Materials to avoid: non-ferrous metals, skin
  - (12) Corrosive action on materials: slight on above

| SECTION S XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------|
| 1) Storage. Store at temperatures below 120°F.                                                                                    |
| 2) Handling: Wear chemical resistant gloves, apron and eye and face protection.                                                   |
| 3) Precautionary labeling: none                                                                                                   |
| SECTION 10 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                                                                    |
| 1) Spill or leak procedures: (2) Small spill/leak: Neutralize with acid. Rinse to drain.                                          |
| (3) Large spill/leak. Mop up or absorb. Neutralize with acid and rinse to drain.                                                  |
| (4) Spill reportable quantity: none                                                                                               |
| 5) Waste disposal method (including clean-up media): Neutralize with acid. Ship to registered waste disposal site.                |
| EPA or appropriate waste classification:     (7)RCRA or appropriate rharacteristic waste. If so, EPA hazardous waste No.     None |
| (8)RCRA or appropriate listed waste. If so, EPA hazardous waste No.                                                               |
| (9) X_Non-RCRA regulated waste.                                                                                                   |
| 10) Procedure for handling empty containers: rinse thoroughly                                                                     |
| 11) Environmental toxicity data: biodegradable                                                                                    |
| 12) Other regulatory controls:                                                                                                    |
| (13) Is material classified under the CLEAN WATER ACT (USA) or appropriate water                                                  |
| egulations as a:  (14) Toxic pollutant (section 307) ? Yes X No                                                                   |
| (15) Hazardous substance (section 311) ?Yes XNo                                                                                   |
| (16) If was reportable quantity (0.0)                                                                                             |

LYON CHEMICAL CO., INC.

### PRODUCT NAME \_\_\_\_EB-24

|     |                       | (17) C       | il (section 311)?                              |             |                | _Yes        | X                | _No                                    |       |
|-----|-----------------------|--------------|------------------------------------------------|-------------|----------------|-------------|------------------|----------------------------------------|-------|
| RE  | (18) Is i<br>GULATION |              | sified under the CL                            | EAN AIF     | ACT (USA)      | or app      | propriat         | e CLEA                                 | N AIR |
|     |                       | (19) F       | lazardous air pollut                           | ant (sec    | tion 12) ?     | <del></del> | Yes              | X                                      | No    |
|     | (20) Co               | mments: no   | one                                            | •           | • ·            |             |                  |                                        |       |
| XXX | XXXXXXX               | X TRANS      | (XXXXXXXXXXX<br>PORTATION AN<br>(XXXXXXXXXXXXX | D SHIP      | PING REQ       | UIREI       | MENT             | S XXXX                                 | (XXXX |
| (1) | Indicate c            | ountry/regul | atory agency which                             | 1 specific  | s requireme    | nts:        |                  |                                        |       |
|     | X(                    | JSA-DOT      | Europe-AD                                      | R/RID       | UN-II          | ON          |                  | _UN-IC                                 | AO    |
|     |                       | ATA          | _Canada-CTC                                    | Other,      | none           | •           |                  |                                        | •,    |
| (2) | Proper sh             | ipping name  | : Cleaning comp                                | ound, liq   | uid, N.O.I.B.  | N.          |                  |                                        |       |
| (3) | Hazard cl             | ass:         | none                                           | <del></del> | (4) Identifica | ation N     | o                | rone                                   |       |
| (5) | Labels re             | quired:      | Flammable                                      | liquid      | Corre          | osive r     | n <b>ate</b> ria | I                                      |       |
|     |                       |              | Other                                          | none        | •              | •           | ·                |                                        |       |
| (6) | Other req             | uirements: _ | none                                           |             |                | ·           |                  |                                        |       |
|     | <del></del>           |              |                                                |             |                | <del></del> |                  | ······································ |       |
|     |                       | ·            |                                                |             |                |             |                  |                                        |       |
|     |                       |              |                                                |             |                |             |                  |                                        |       |
| XX  | (XXXXXXX              | XXXXXXX      | XXXXXXXXXXXX<br>XXXXXXXXXXXX<br>XXXXXXXXXXXX   | NOTES       | XXXXXXXX       | XXXX        | XXXXX            | XXXXX                                  | XXXXX |

CPHA 174 Care 105

| Material Safety Data Sheet May be used to comply with OSHA's Hezard Communication Standard, 29 CFR 1910.1200, Standard must be consulted for specific requirements. |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------|---------------------------------------|--|
| IDENTITY (As used on Label and List) LIMESTONE - CRUSHED STONE                                                                                                      |                                                 | Note: Blank spaces are not permitted. If any term is not applicable, or no information is available, the space must be marked to indicate that, |                                         |                             |                                       |  |
| - Section I                                                                                                                                                         |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
| Manufacturer's Name                                                                                                                                                 |                                                 | Emergency Telep                                                                                                                                 |                                         |                             |                                       |  |
| MATERIAL SERVICE CORPORATION                                                                                                                                        |                                                 | 312-372-36                                                                                                                                      |                                         |                             |                                       |  |
| Address (Number, Street, City, State, and ZIP Code) 222 N. LA SALLE STREET                                                                                          |                                                 | Telephone Numb                                                                                                                                  |                                         |                             |                                       |  |
| ZZZ H. CA SALLE STREET                                                                                                                                              |                                                 | 312-372-36<br>Date Prepared                                                                                                                     | <u>vv</u>                               | <del></del>                 |                                       |  |
| CHICAGO. ILLINOIS 60601                                                                                                                                             | 6/6/89<br>Signature of Prep                     | serer (optioner)                                                                                                                                | *************************************** |                             |                                       |  |
| Section II — Hazardous ingredients/ident                                                                                                                            | ity informatio                                  | n                                                                                                                                               |                                         |                             |                                       |  |
| Heisardous Components (Specific Chemical Identity; C                                                                                                                | Common Name(s))                                 | OSHA PEL                                                                                                                                        | ACCIH TLY                               | Other Limits<br>Recommended | 1 <b>% (aption</b>                    |  |
| CALCUM CARRONATE CAS: 1317-65-3                                                                                                                                     |                                                 | SFF I IMITS                                                                                                                                     | RELOW                                   |                             |                                       |  |
| DUST MAY CONTAIN RESPIRABLE SILICA PAR                                                                                                                              | TICLES CAS                                      | 14808-60-7                                                                                                                                      |                                         |                             |                                       |  |
| DUST < 1% QUARTZ: TOTAL: ACGIH & MS  DUST < 1% QUARTZ TOTAL: MSHA = 30 -  RESPIRABLE: MSHA & OSHA = 10  RESPIRABLE QUARTZ: ACGIH = 0.                               | HA = 10. OSHA<br>(% QUARTZ + :<br>- (% QUARTZ + | = 15 RESPIRARIE<br>3), OSHA = 30 :<br>2).                                                                                                       | AHZO & AHZM :                           |                             |                                       |  |
| Section III — Physical/Chemical Characte                                                                                                                            | rietics                                         |                                                                                                                                                 | M                                       |                             | ·                                     |  |
| Boiling Point<br>DECOMPOSES                                                                                                                                         | 1652°G                                          | Specific Gravity (F                                                                                                                             | 1 <sub>2</sub> O = 1)                   |                             | 2.7-2.95                              |  |
| Vapor Pressure (mm Hg.)                                                                                                                                             |                                                 | Metting Point                                                                                                                                   |                                         | <u> </u>                    | 1                                     |  |
| Vapor Density (AIR = 1)                                                                                                                                             | N/A                                             | Evergration Rate                                                                                                                                |                                         | <u></u>                     | N/A                                   |  |
| Vapor Deliany (var 1)                                                                                                                                               | N/A                                             | (But) Austre - 1                                                                                                                                |                                         |                             | N/A                                   |  |
| Solubility in Water<br>NEGLIGIBLE                                                                                                                                   |                                                 |                                                                                                                                                 | · · · · · · · · · · · · · · · · · · ·   | •                           |                                       |  |
| Appearance and Odor WHITE TO OFF WHITE IN COLOR - ODORLESS                                                                                                          | SOLID                                           |                                                                                                                                                 |                                         |                             | · · · · · · · · · · · · · · · · · · · |  |
| Section IV - Fire and Explosion Hezard                                                                                                                              |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
| Fleen Point (Method Used)                                                                                                                                           | · · · · · · · · · · · · · · · · · · ·           | Parrenable Limits                                                                                                                               |                                         | T UBL                       | UEL.                                  |  |
| N/A                                                                                                                                                                 |                                                 | N/A                                                                                                                                             |                                         | N/A                         | N/A                                   |  |
| Exinguishing Mode.  N/A                                                                                                                                             |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
| Special Fire Fighting Procedures                                                                                                                                    |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
| NONE REQUIRED                                                                                                                                                       |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |
| Unusual Fire and Explosion Hazards NONE KNOWN                                                                                                                       |                                                 |                                                                                                                                                 |                                         |                             |                                       |  |

!

| Slability                                                                                     | Unstable                           |                    | Conditions to Avoid                   | 41.4                                          |                            |                            |             |
|-----------------------------------------------------------------------------------------------|------------------------------------|--------------------|---------------------------------------|-----------------------------------------------|----------------------------|----------------------------|-------------|
|                                                                                               | Stable                             |                    |                                       | N/A                                           |                            |                            |             |
| Incompatibility (A                                                                            | (aterials to Avoid)                | <u> </u>           |                                       | N/A                                           |                            |                            |             |
| Hazardona Decor                                                                               | position or Byprodu                |                    | CONTACT WITH STR                      | ONG ACIDS                                     |                            | • •                        |             |
|                                                                                               | NONE KHOWN                         |                    |                                       |                                               |                            |                            |             |
| Hazardous<br>Polymerization                                                                   | May Occur                          |                    | Conditions to Avoid                   | N/A                                           |                            |                            |             |
|                                                                                               | Will Not Occur                     | X                  |                                       | N/A                                           |                            |                            |             |
| Section VI —                                                                                  | Health Hazard                      | Data               | <u> </u>                              |                                               |                            |                            |             |
| Roule(s) of Entry:                                                                            |                                    | ation?             |                                       | Skin?                                         |                            | Ingestion?                 | <del></del> |
| YES NO NO IteaNh Hazards (Acute and Chronic)                                                  |                                    |                    |                                       |                                               |                            |                            |             |
|                                                                                               |                                    | AY IF              | RITATE RESPIRATOR                     | Y SYSTEM. EYES                                | AND SKIN. CHRONI           | C EXPOSURE TO RESPIRABLE   |             |
| LIMESTONE D                                                                                   | UST IN EXCESS                      | F EXP              | OSURE LIMITS COUL                     | D CAUSE PNEUMO                                | CONTOSTS (LUNG DIS         | EASE). CHRONIC EXPOSURE    | 0           |
|                                                                                               |                                    |                    | LIMESTONE DUST IN                     |                                               | OSURE LIMITS COULD         |                            |             |
| Carcinogenicity:                                                                              | NTP                                |                    |                                       | IARC Monog                                    | raphs?                     | OSHA Regulated?<br>NO      |             |
| IARC HAS DE                                                                                   | TERMINED THAT 1                    | HERE               | IS SUFFICIENT EVI                     | DENCE FOR CARC                                | INOGENICITY TO EXP         | PERIMENTAL ANIMALS EXPOSED | TO.         |
|                                                                                               |                                    |                    |                                       |                                               |                            | NOGENICITY TO HUMANS. "LIM |             |
|                                                                                               |                                    |                    |                                       |                                               |                            | IONS SUCH AS CHANCE, BATS  |             |
|                                                                                               | <del></del>                        |                    | UATELY BE EXCLUDE                     |                                               | AL VIIII LALLONS C         | <u> </u>                   |             |
| CORFOONDING                                                                                   | PACIONS CANNOT                     | AUEL               | WIEL! BE EACLODE                      | <u>и.                                    </u> |                            |                            |             |
| Signs and Symp                                                                                | oms of Exposure                    |                    |                                       |                                               | DOCATUTHE WITH             | JUSTUMIT EVERTION CONCUS   | NC.         |
|                                                                                               |                                    |                    |                                       |                                               |                            | HALTHOUT EXERTION, COUGHT  | -           |
| DIMINIZHED                                                                                    | WORK CAPACITY                      | EDOCI              | TON OF LONG VOLUM                     | E AND KIGHT HE                                | ART ENLARGEMENT AI         | IO/OK FAILURE              |             |
| No. of Co., Obs.                                                                              |                                    |                    |                                       |                                               |                            |                            |             |
| Medical Condition<br>Generally Aggrav                                                         | sted by Exposure                   | INHAL              | ING RESPIRABLE DU                     | ST MAY AGERAYA                                | TE EXISTING RESPI          | RATORY SYSTEM DISEASE(s) A | ID/OR       |
| DYSFUNCTION                                                                                   | IS. EXPOSURE TO                    | DUST               | MAY AGGRAVATE EX                      | ISTING SKIN AN                                | D/OR FYE COMBITION         | 15                         |             |
| INHALATION:                                                                                   | First Aid Procedures REMOVE TO FRE | SH AI              | R EYES: FLUSH                         | WITH WATER CE                                 | T MEDICAL ATTENTION        | SKIN- WASH WITH SOAD       |             |
| AND WATER.                                                                                    |                                    |                    |                                       |                                               | •                          |                            |             |
|                                                                                               |                                    |                    | ie Handling and                       | Use                                           |                            |                            |             |
| Steps to Be Take                                                                              | on in Case Meterial                | is Floie<br>Nict ( | ased of Spilled<br>'An re cenedated h | AY FYPOSE CLEA                                | N-UP PERSONNEL TO          | DESPISABLE DUST, WETTING   |             |
|                                                                                               |                                    |                    | OF RESPIRATORY EQ                     |                                               | •                          |                            |             |
|                                                                                               |                                    |                    |                                       |                                               |                            |                            |             |
| Weste Disposal                                                                                | Method                             |                    |                                       |                                               |                            |                            |             |
| DISPOSE OF                                                                                    | WASTE MATERIAL                     | LIL!               | CCORDANCE WITH FE                     | MERAL STATE A                                 | MO LOCAL PEGGATIO          | <b>XS</b>                  |             |
| Describera to I                                                                               | le Taken in Handlin                | 4 1                | hodos                                 |                                               |                            |                            |             |
| RESPIRABLE                                                                                    | DUST HAY BE GE                     | ERATI              | D DURING HANDLING                     | AND STORAGE                                   | THE CONTROL MEASI          | DRES IDENTIFIED IN SECTION | -TITE       |
| OF THE MSD                                                                                    | SHOULD BE APP                      | .IED               |                                       |                                               |                            |                            |             |
| Other Precauto                                                                                | 100                                |                    |                                       |                                               |                            |                            |             |
|                                                                                               | ·                                  |                    |                                       |                                               |                            |                            |             |
| Section VIII                                                                                  | — Control Mes                      | 211720             |                                       |                                               |                            |                            |             |
|                                                                                               |                                    |                    |                                       | SUST RESPIRATOR                               | FOR CONDITIONS W           | HERE DUST LEVELS EXCEED    |             |
| APPLICABLE<br>Ventilation                                                                     | EXPOSURE LIMIT                     |                    | REDUCE DUST CONC                      | CHTDATIONS                                    | Special                    |                            |             |
| A di summini                                                                                  | BELOW APPLICA                      | IRLE I             | TIMITS THE TANKEN                     | SKINATIONS                                    | Other                      | N/A                        |             |
|                                                                                               | CONCENTRATION                      | ray (j.<br>15_rei  | E TO REDUCE DUST                      | ONSURE LIMITS                                 |                            | N/A                        |             |
| Protective Glav                                                                               | 95                                 |                    |                                       | Eye Pi                                        | otection<br>SAFETY GLASSES | IND/OR GOGELES             |             |
| Other Protectiv                                                                               | O PREVENT SKIN                     | nent               |                                       |                                               |                            |                            |             |
|                                                                                               |                                    |                    | LONG PANTS TO PE                      |                                               |                            |                            |             |
| Works typically Practices WASH EXPOSED SKIN WITH SOAP AND WATER, WASH WORK CLOTHES FREQUENTLY |                                    |                    |                                       |                                               |                            |                            |             |



7500 Grand Division Avenue • Cleveland, Ohio 44125 • 216/441 6600

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER 1- CCPC-00-3343

### MATERIAL SAFETY :

Chemtrec Chemical Transportation Emergency Telephone No.: 800-424-9300; District of

Columbia: 202-483-7616

Emergency

Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named

products:

CARBON HOT/COLD ROLLED SHEETS, STRIP, AND PLATE, 1008 THRU 1046 INCLUSIVE

#### 1. HAZARDOUS INGREDIENTS

| MATERIAL   | CAS #     | % (RANGE) | ACGIH-TLV             | OSHA-PEL                  |
|------------|-----------|-----------|-----------------------|---------------------------|
| Iron       | 7439-89-6 | 98-99     | 5 mg/M3 (oxide fumes) | 10 mg/M3 (oxide fume)     |
| Carbon     | 7440-44-0 | <1.0      | Not Listed            | Not Listed                |
| Manganese  | 7439-96-5 | .25-1.65  | 5 mg/M3               | 5 mg/M3 (Dust)            |
| Phosphorus | 7723-14-0 | .04 Max   | 0.1/M3                | 0.1 mg/M3 (yellow)        |
| Sulphur    | 7704-34-9 | .00135    | 5 mg/M3               | 13mg/M3 (Sulphur dioxide) |

(OPTIONAL): Light surface coating of petroleum oil and greased edges. Use of

gloves is recommended to prevent skin irritation.

NOTE:

See additional comments on the back under item #7.

#### PHYSICAL DATA

Not Applicable

#### FIRE AND EXPLOSION HAZARD DATA

Not Applicable

#### DISCLAIMER

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The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular application, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Metalsource to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are or may be required.

#### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust should be used to keep worker exposure ballow accepted exposure limits during welding and prinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

#### 5. PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can product an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

<u>Chronic</u>: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

#### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

#### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4.5.5 for further information.

The steel itself presents no health hazard unless it is welled, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

DIRECTION OF: W.R. BELL

DATE:

OCTOBER 22, 1985

7500 Granu Division Avenue \* Cleveland Unic 44125 \* 216/441-6600

### MATERIAL SAFET

CEPRO COPPER PRODUCTS COMPANY MSDS NUMBER - COPO-00-00444

Chemtrac Chemical Transportation Emergency Telephone No.: 800-424-9300; District of

Columbia: 202-483-7616

HAZARDOUS INGREDIENTS

Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named products:

CARBON HOT/COLD POLLED SHEETS, STRIP, AND PLATE, HIGH STRENGTH-LOW ALLOY

|           |           |           | PERMISSIBLE A                | IR LEVEL          |
|-----------|-----------|-----------|------------------------------|-------------------|
| MATERIAL  | CAS #     | 2 (RANGE) | ACGIH-TLV (Mg/M <sup>3</sup> | OSHA-PEL (Mg/M3)  |
| Iron      | 7439-89-6 | Salance   | 5 (Oxide fume)               | 10 (Oxide fume)   |
| Carbon    | 7440-44-0 | .01-1.2   | Not Listed                   | Not Listed        |
| Manganese | 7439-96-5 | .25-2.0   | 5 (Dust)                     | 5 (Ceiling Limit) |
| Chromium  | 7740-47-3 | .01-2.0   | .05 (Cr VI-Compounds)        | 0.1 (Cr-Metal)    |
| Nickel    | 7740-02-0 | .01-1.0   | 1                            | 1                 |

0.2 (Fume) Copper 7740-58-0 .01-1.0 0.2 (Fume) Trace Elements N/A <2.0 N/A

Light surface coating of petroleum oil and greased edges. Use of gloves is recommended to prevent skin irritation.

NOTE:

See additional comments on the back under item #7.

#### PHYSICAL DATA

Not Applicable

#### FIRE AND EXPLOSION HAZARD DATA

Not Applicable

### DISCLAIMER

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As sold, the product described in this MSDS is considered by Metalsource to be an "article" within the meaning of Title 23 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made cursuant to that requirement. Compliance with all applicable federal, state, and 'ocal laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those pascribed herein, are or havine required.

#### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

#### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

Exposure to high concentration of nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis and edema. Certain forms of nickel dust may cause nasal or lung cancer in humans.

Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of lung cancer.

#### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

#### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

DIRECTION OF:

W.R. BELL.

216/441-6600

DATE:

OCTOBER 9, 1985

TELEPHONE NO.

SUPERSEDES MSDS DATED

N/A

An ALCO Standard Company

7500 Grand Division Avenue \* Cleveland, Ohio 11125 \* 216/441 6600

### MATERIAL SAFETY DATA

Chemtrec Chemical Transporation Emergency

Telephone No.: 800-424-9300; District of

Columbia: 202-483-7616

Emergency

Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named products:

CARBON HOT DIPPED GALVANIZED STEEL PRODUCTS: COILS, SHEETS, STRIP & PLATE

#### HAZARDOUS INGREDIENTS

|                      |           |           | PERMISSIBLE AIR LEVEL          |                     |  |
|----------------------|-----------|-----------|--------------------------------|---------------------|--|
| MATERIAL             | CAS #     | % (RANGE) | ACGIH-TLV (Mg/M <sup>3</sup> ) | OSHA-PEL (Mg/M3)    |  |
| Iron                 | 7439-89-6 | Balance   | 5 (oxide fume)                 | 10 (oxide fume)     |  |
| Carbon               | 7440-44-0 | .01-1.2   | Not Listed                     | Not Listed          |  |
| Manganese            | 7439-96-5 | .25-2.0   | 5 (dust)                       | 5 (ceiling limit)   |  |
| Chromium             | 7740-47-3 | .01-2.0   | .05 (Cr VI-Compounds)          | 0.1 (Cr - Metal)    |  |
| Nickel               | 7740-02-0 | .01-1.0   | 1                              | 1                   |  |
| Copper               | 7740-58-0 | .01-1.0   | 0.2 (fume)                     | 0.2 (fume)          |  |
| Trace<br>Elements    | N/A       | <2.0      | N/A                            | N/A                 |  |
| Metallic<br>Coating: |           |           |                                |                     |  |
| Zinc                 | 7440-66-6 | 99.0 Min  | 5.0 (Zinc Oxide Fume)          | 5.0 (Zinc Oxide Fur |  |
| Trace<br>Elements    | N/A       | <1.0      | N/A                            | N/A                 |  |

(OPTIONAL): Light surface coating of petroleum oil, greased edges, chromatic treatment or phosphate, borax and stearate soaps. The possible presence of these coatings should be considered when evaluating employee health hazards and exposures during welding or other dust/ fume generating activities. Use of gloves is recommended to prevent skin irritation.

NOTE:

See additional comments on the back under item #7.

#### DISCLAIMER

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#### FIRE AND EXPLOSION HAZARD DATA

Not Applicable

#### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

#### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

Chronic: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

#### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

#### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. Curing these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

DIRECTION OF: W.R. BELL

DATE:

NOVEMBER 12, 1985

TELEPHONE NO.

216/441-6600

SUPERSEDES MSDS DATED

N/A



7500 Grand Division Avenue + Cleveland, Ohio 44125 + 216/441-6600

### MATERIAL SAFETY DA

Emergency Tendential Control of the 
CERRO COPPER FRODUCTS COMPANY MEDS NUMBER - COPO-08-9146

, - + v

Chemtrec Chemical Transporation Emergency Telephone No.: 800-424-9300; District of

Telephone No. 216/622-5000

Columbia: 202-483-7616

This MSDS applies to the following established steel grades, types, and/or trade named

products:

CARBON STEELS, NON-RESULFURIZED, 1008-1095 INCLUSIVE - ALL FORMS

| 1.         | HAZARDOUS    | INGREDI | ENT: |
|------------|--------------|---------|------|
| <b>+</b> • | 11.127112000 | 1110112 |      |

| MATERIAL   | CAS #     | % (RANGE)        | ACGIH-TLV             | OSHA-PEL                     |
|------------|-----------|------------------|-----------------------|------------------------------|
| tron       | 7439-89-6 | >95              | 5 mg/M3 (oxide fumes) | 10 mg/m3 (oxide fumes)       |
| Carbon     | 7440-44-0 | <b>&lt;</b> 1.03 | Not Listed            | Not Listed                   |
| Manganese  | 7439-96-5 | <b>&lt;</b> 1.0  | 5 mg/M3               | 5 mg/H3 (Dust)               |
| Phosphorus | 7723-14-0 | <b>&lt;</b> 0.5  | 0.1/M3                | 0.1 mg/H3 (Yellow)           |
| Sulphur    | 7704-34-9 | <b>&lt;</b> 0.5  | 5 mg/M3               | 13mg/M3 (Sulphur<br>Dioxide) |

(OPTIONAL): Light surface coating of petroleum oil. Use of gloves is recommended

to prevent skin irritation.

NOTE:

See additional comments on the back under item #7.

#### PHYSICAL DATA

Not Applicable.

#### 3. FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

### DISCLAIMER

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#### SPECIAL PROTECTION INFORMATION 4.

VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

#### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Douli's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

Chronic: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

#### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

#### ADDITIONAL COMMENTS 7.

NOTE: The percent composition reflects the range that is possible within the GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

W.R. BELL

DATE:

DIRECTION OF:

216/441-6600

November 7, 1985

TELEPHONE NO.

SUPERSEDES MSDS DATED

N/A

7500 Grand Presion Avenue • Creveland, Ohio 44105 • 216/441 6600

MATERIAL SAFETY

Chemirec Chemical Transportation Emergency Telephone No.: 800-424-9300; District of Emergency

Columbia: 202-483-7616

Telephone No. 216/622-5000

1.2

This MSDS applies to the following established steel grades, types, and/or trade named products:

ALLOY STEELS. HOT ROLLED/COLD FINISHED STANDARD GRADES 1330-9260 INCLUDING NITRIDING STEEL, AISI-4130, 4140, 4145, 4150, 6150, 8620, 52100.

### HAZARDOUS INGREDIENTS

| MATERIAL   | CAS #     | % (RANGE) | ACGIH-TLV (Mg/M3)                          | OSHA-PEL (Mg/M3)                                                           |
|------------|-----------|-----------|--------------------------------------------|----------------------------------------------------------------------------|
| Iron       | 7439-89-6 | 86-99     | 5 (Oxide fumes)                            | 10 (oxide fume)                                                            |
| Carbon     | 7440-44-0 | .01-1.10  | N/A                                        | N/A                                                                        |
| Manganese  | 7439-96-5 | .25-2.00  | 5                                          | 5 (Dust)                                                                   |
| Phosphorus | 7723-14-0 | .035 Max  | 0.1                                        | 0.1 (Yellow)                                                               |
| Sulphur    | 7704-34-9 | .00110    | 5                                          | 13 (Sulphur Dioxide)                                                       |
| Silicon    | 7740-21-3 | .15-2.20  | N/A                                        | N/A                                                                        |
| Nickel     | 7740-02-0 | .01-2.50  | 1                                          | 1                                                                          |
| Chromium   | 7740-47-3 | .01-2.50  | 0.5                                        | .5 Soluble Chromic<br>Chronous Salts (VI)<br>1 Chrome & Insoluble<br>Salts |
| Molybdenum | 7439-98-7 | .01-1.10  | 5 Soluble Compounds 10 Insoluble Compounds | 5 Soluble Compounds<br>15 Insoluble Compounds                              |
| Vanadium   | 7440-6-22 | .0150     | 0.05 RESP.<br>0.01 (Pentoxide Fume)        | .5 (Dust)<br>.1 (Fume)                                                     |
| Aluminum   | 7429-90-5 | ∠2.0      | 5                                          | N/A                                                                        |

(OPTIONAL): Coatings trace surface coating of petroleum oil, phosphate or dry lube

(borax or lime).

NOTE:

Use gloves to prevent skin irritation. See additional comments under item # 7.

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(Disclaimer continued on other side)

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#### PHYSICAL DATA

Not Applicable.

#### FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

#### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eve and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

#### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

Nickel - Irritation of eyes, nose and lungs; dermatitis.

Chromium - Irritation of eyes, nose and lungs; dermatitis.

Molybdenum - Slight irritation of eyes, nose and throat.

Vanadium - irritant to the conjuctivae and respiratory tract (greenish-black discoloration of the tongue and shortness of breath).

<u>Chronic</u>: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

Nickel - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of masal passages and lungs.

Based upon available information, there does not appear to be any evidence that exposure to welding fumes induces human cancers.

Chromium - (Same as nickel.)

Molybdenum - Pain in joints, mands, thees, and feet.

Vanadium - No reported cases of exposure to vanadium.

#### FMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

#### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 and 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| PREPARED UNDER DIRECTION OF: | W.R. BELL | DATE: NOVEMBER 6, 1985 |
|------------------------------|-----------|------------------------|
| TELEPHONE NO.                |           | SUPERSEDES MSDS DATED  |

216/441-6600

N/A



7500 Grand Division Avenue • Cleveland, Olio 44125 • 216/441 6600

Chemtrec Chemical Transportation Emergency Telephone No.: 800-424-9300; District of

Columbia: 202-483-7616

Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named products:

ALLOY STEELS, HOT ROLLED/COLD FINISHED HY-TEN (R) B3X, B3X 40, A.S.T.M. 322-82

| 1. | HAZARDOUS | INGREDIENTS |
|----|-----------|-------------|
| -  |           |             |

| MATERIAL    | CAS #        | % (RANGE)                          | ACGIH-TLV (Mg/M3)                             | OSHA-PEL (Mg/M3)                                                           |
|-------------|--------------|------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------|
| Iron        | 7439-89-6    | 86-99                              | 5 (Oxide fumes)                               | 10 (Oxide fume)                                                            |
| Carbon      | 7440-44-0    | .3355                              | N/A                                           | N/A                                                                        |
| Manganese   | 7439-96-5    | .68 - 1.20                         | 5                                             | 5 (Dust)                                                                   |
| Phosphorus  | 7723-14-0    | .04 Max                            | 0.1                                           | 0.1 (Yellow)                                                               |
| Sulphur     | 7704-34-9    | .0610                              | 5                                             | 13 (Sulphur Dioxide)                                                       |
| Silicon     | 7740-21-3    | .1535                              | N/A                                           | N/A                                                                        |
| Nickel      | 7740-02-0    | .25 Max                            | 1                                             | 1                                                                          |
| Chromium    | 7740-47-3    | .55-1.10                           | 0.5                                           | .5 Soluble Chromic<br>Chronous Salts (VI)<br>1 Chrome & Insoluble<br>Salts |
| Molybdenum  | 7439-98-7    | .1525                              | 5 Soluble Compounds<br>10 Insoluble Compounds | •                                                                          |
| (OPTIONAL): | Coatings tra |                                    | ating of petroleum oil, p                     | hosphate or dry lube                                                       |
| NOTE:       | -            | to prevent skir<br>nal comments ur |                                               |                                                                            |

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PHYSICAL DATA

Not Applicable.

vENT/LATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NICSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

# PHYSIOLOGICAL EFFECTS

FRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

Nickel - Irritation of eyes, nose and lungs; dermatitis. Chromium - Irritation of eyes, nose and lungs; dermatitis. Molybdenum - Slight irritation of eyes, nose and throat.

Chronic: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

Nickel - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs.

Based upon available information, there does not appear to be any evidence that exposure to welding fumes induces human cancers.

Chromium - (Same as nickel.)

Molybdenum - Pain in joints, hands, knees, and feet.

### FMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

# ADDITIONAL COMMENTS

WMTE: The percent composition reflects the range that is possible within the GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 and 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

DIRECTION OF: W.R. BELL

DATE:

NOVEMBER 6, 1985

TELEPHONE NO.

216/441-6600

SUPERSEDES MSDS DATED N/A

7500 Grand Division Avenue \* Cleveland, Ohio 44125 \* 216/441 6600

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Chemtrec Chemical Transportation Emergency Telephone No.: 800-424-9300; District of

Columbia: 202-483-7616

cmergency Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named products:

> CARBON STEELS, RESULFURIZED, 1110-1151 INCLUSIVE - ALL FORMS CARBON STEELS, RESULFURIZED, 11110-11151 INCLUSIVE - LEADED - ALL FORMS CARBON STEELS, RESULFURIZED, 12L11-12L15 INCLUSIVE - LEADED - ALL FORMS

### HAZARDOUS INGREDIENTS

| MATERIAL       | CAS #                  | % (RANGE)     | ACGIH-TLV                           | OSHA-PEL                             |
|----------------|------------------------|---------------|-------------------------------------|--------------------------------------|
| 1ron<br>Carbon | 7439-89-6<br>7440-44-0 | >95<br><1.03  | 5 mg/M3 (Oxide fumes)<br>Not Listed | 10 mg/M3 (oxide fumes)<br>Not Listed |
| Manganese      | 7439-96-5              | <1.7          | 5 mg/M3                             | 5 mg/M3 (Dust)                       |
| Phosphorus     | 7723-14-0              | <0.5          | 0.1/M3                              | 0.1mg/M3 (Yellow)                    |
| Sulphur        | 7704-34-9              | <0.5          | 5 mg/M3                             | 13 mg/M3 (Sulphur                    |
| (Applies to    | leaded Grades          | only - having | L in grade number)                  | Dioxide)                             |
| Lead           | 7439-92-1              | <0.5          | 0.15 (dusts & fumes)                | 0.05 (dusts & fumes)                 |
| Tellurium      | 13494-80-9             | <0.2          | 0.1 (as Te Compounds)               | 0.1 (as Te compounds)                |

(OPTIONAL): Light surface coating of petroleum oil. Use of gloves is recommended

to prevent skin irritation.

NOTE:

See additional comments on the back under Item #7.

# PHYSICAL DATA

Not Applicable.

# FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

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VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

# PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though material such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

Nickel - irritation of eyes, nose and lungs; dermatitis.

Chromium - Irritation of eyes, nose and lungs; dermatitis.

Molybdenum - Slight irritation of eyes, nose and throat.

Vanadium - Irritant to the conjunctivae and respiratory tract (greenish-black discoloration of the tongue and shortness of breath).

Lead - (lead dust fume) - ingestion or inhalation of large amounts of lead can cause severe headaches, convulsions, coma, delirium, and possibly death.

Garlic odor of breath and perspiration, metallic taste in mouth, dryness of the mouth. Chronic: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

Nickel - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, გის დავასსც დაიდა დე უთვა უთვათვა თის lungs. Based upon available information, there does not appear to be any evidence that exposure to welding fumes induces human cancers.

Chromium - (same as nickel).

Molybdenum - Pain in joints, hands, knees, and feet.

Vanadium - No reported cases of exposure to vanadium.

Lead - (Lead dust fume) - Headache, constipation, abdominal pains, decreased appetite, central nervous system damage, and reproductive effects.

### FMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within the GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER

THE DIRECTION OF: W.R. BELL

TELEPHONE NO. 216/41-6600

DATE

NOVEMBER 7, 1985

SUPERSEDES MSDS DATED: N/A



7500 Grand Division Avenue • Cleveland, Ohio 44125 • 216/441-6600

MATERIAL SAFETY BATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

-----

- yako -- za Na kozulululu

Emergency

Telephone No. 412-339-5059

10

This MSDS applies to the following established steel grades, types, and/or trade named products:

GROUP I: STAINLESS STEEL TYPES: 201, 201L, 301, 302, 302B, 304F, 304F, 304F, 304L, 304N, 304LN, 305, 308, 308L 309, 309S, 310, 310S, 310CB, 321, 330, 332, 334, 347.

| 1. H | AZARDOUS INGREDI     | ENTS           |                                                                                     |                                        |           |
|------|----------------------|----------------|-------------------------------------------------------------------------------------|----------------------------------------|-----------|
|      | MATERIAL             | % (RANGE)      | ACGIH-TLV (Mg/M3)                                                                   | OSHA-PEL (Mg/M3)                       | CAS #     |
|      | Iron                 | <b>&gt;</b> 50 | 5 (oxide fume)                                                                      | 10 (oxide fume)                        | 7439-89-0 |
|      | Chromium             | 3-29           | 0.5 (metal)<br>0.05 (Cr+6)<br>Suspected carcinogen-NTP & IARC<br>See Sections 5 & 7 | 1 (metal)                              | 7740-47-  |
|      | Nickel               | 3.5-42.5       | 1 (metal) Suspected carcinogen-NTP & IARC See Sections 5 & 7                        | 1 (metal)                              | 7740-02-0 |
|      | Manganese            | 0.25-7.58      | 5 (dust)<br>1 (fume)                                                                | 5 (dust)<br>5 (fume)                   | 7439-96-  |
|      | Silicon              | 0.13-3.00      | <pre>10 (total dust) 5 (respirable dust)</pre>                                      | 15 (total dust)<br>5 (respirable dust) | 7740-21-3 |
|      | Niobium/<br>Tantalum | 0.002-1.10     | 5 (Ta)                                                                              | 5 (Ta)                                 | 7440-25-  |

2. PHYSICAL DATA

Not Applicable.

FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

# DISCLAIMER

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MSDS-9

# 4. SPECIAL FROTESTISM IMPORMATION

VENTILATION: Lata : . Lata : intiliation should be used to into the environment below totacted integers limits during welding approaches.

eggs offer and tight while they are being loss success, appropriete N103H approved margin success that) be used, and solected according to 29 CFR 1910.194.

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OTHER: 8 1

# PHYSIOLGGICAL INCLUDE

PRIMARY ROUTE OF EMPOSURE

TERESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from valding and grinding; dusts from prinding or cutting.

N/A

### EFFECTS OF OVEREXACSUME

ACUTE: Excessive inhalation of fumos from many notals can profites an acute reaction known as "matal fume fever". Though metals such as ecopen and zinc name been most associated with metal fume fever. It is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poicons; Hamilton and Hardy: industrial Toxicology) that other metall's fumos may produce this condition. Symptoms consist of chills and faver (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes or dutt may cause severe irritation, ulceration, or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e., respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or furs does one present any signs of pneumoconiosis. Physical examinations of these exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Niobium is highly toxic once it reaches the blood stream. Because it is poorly absorbed, it is less toxic from the gastrointestinal tract. It has been reasonably concluded from animal studies that small additional amounts of niobium from industrial exposure may have adverse health effects over the long term when added to the niobium consumed in the human diet, particularly when added to the respiratory tract.

Tantalum is inert toward body tissues and fluids and is consequently nontoxic after industrial exposure. Pulmonary fibrosis was presented by some Russian workers, but there was no reference to tantalum concentrations or degree of exposure.

### 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

# 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible with this CROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium crinickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL . DATE: NOVEMBER 19, 1985

TELEPHONE NO. 2167441-6500 SUPERCEDES MSDS DATED: N/A



7500 Grand Division Avenue • Cleveland, Ohio 44125 • 216/441-6600

# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 412-339-5059

This MSDS applies to the following established steel grades, type, and/or trade named products:

GROUP II: TOOL AND STAINLESS STEELS: A-2, S-7 TYPES: 316, 316L, 317, 317L, 317LX, 317LXN, 336, 337, 350, 444, 447, 448

|    | HAZARDOUS INGREDI<br>MATERIAL | % (RANGE)     | ACGIH-TLV (Mg/M3)                                                                                    | OSHA-PEL (Mg/M3)                       | CAS #                                   |
|----|-------------------------------|---------------|------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------|
|    | lron                          | > 50          | 5 (oxide fume)                                                                                       | 10 (oxide fume)                        | 7439-89-6                               |
|    | Chromium                      | 0.9-30        | 0.5 (metal)<br>0.05 (Cr+6)<br>Suspected carcinogen-NTP & IARC<br>See Sections 5 & 7                  | 1 (metal)                              | 7740-47-3 7740-02-0 7439-96-5 7740-21-3 |
|    | Nickel                        | 0.07-80.45    | <pre>1 (metal) Suspected carcinogen-NTP &amp; IARC    See Sections 5 &amp; 7 5 (dust) 1 (fume)</pre> | l(metal)                               |                                         |
|    | Manganese                     |               |                                                                                                      | 5 (dust)<br>5 (fume)                   |                                         |
|    | Silicon                       | 0.12-1.1      | <pre>10 (total dust) 5 (respirable dust)</pre>                                                       | 15 (total dust)<br>5 (respirable dust) |                                         |
|    | Cobalt                        | 0.01-1.0      | 0.1<br>(0.05 intended change)                                                                        | 0.1                                    |                                         |
|    | Vanadium                      | 0.10-1.1      | 0.05 (dust)<br>0.05 (fume)<br>Values for V205                                                        | 0.5 (dust)<br>0.1 (fume)               | 77 <b>40-</b> 02-2                      |
|    | Niobium/<br>Tantalum          | 0.002-4.15    | 5 (Ta)                                                                                               | 5 (Ta)                                 | <b>7440-</b> 25-7                       |
| 2. | PHYSICAL DATA                 |               | Not App                                                                                              | licable.                               | <del></del>                             |
| 3. | FIRE AND EXPLOSIO             | N HAZARD DATA | Not App                                                                                              | olicable.                              |                                         |

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e., respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Niobium is highly toxic once it reaches the blood stream. Because it is poorly absorbed, it is less toxic from the gastrointestinal tract. It has been reasonably concluded from animal studies that small additional amounts of nobium from industrial exposure may have adverse effects over the long term when added to the niobium consumed in the human diet, particularly when added to the respiratory tract.

Tantalum is inert toward body tissues and fluids and is consequently nontoxic after industrial exposure. Pulmonary fibrosis was presented by some Russian workers, but there was no reference to tantalum concentrations or degree of exposure.

Vanadium dusts cause a persistent cough which develops after 5 hours of exposure and may last up to 10 days. Pulmonary irritation also results from vanadium, but there are no deviations in pulmonary function or other laboratory tests.

Cobalt causes a dermatitis of the allergic sensitivity type at points of friction. Cobalt toxicity also results in a progressive, diffuse, interstitial pneumonia with a nonproductive cough, dyspnea on exertion, interstitial fibrosis and cell damage. Other workers have experienced a sensitized respiratory disease characterized by cough, wheezing and shortness of breath where upon removal from the environment, the symptoms subsided.

# EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL DATE: NOVEMBER 6, 1985

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A

An ALCO Standard Company

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# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 412-339-5059

This MSDS applies to the following established steel grades, type, and/or trade named products:

GROUP III: TOOL AND STAINLESS STEELS: D-2, ONTARIO 410, 402, 4105, 410HC, 411, 412, 413, 419, 420, 425MOD, 430, 403TI, 430X, 431, 434, 435, 436, 439, 440A, 441, 446, 501, 502 TYPES: 400, 403, 404, 405, 405NA, 406, 407, 408, 409,

|        | MATERIAL           | % (RANGE)  | ACGIH-TLV (Mg/M3)                                                                   | OSHA-PEL (Mg/M3)                       | CAS #                                                       |
|--------|--------------------|------------|-------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------|
|        | Iron               | > 50       | 5 (oxide fume)                                                                      | 10 (oxide fume)                        | 7439-89-                                                    |
|        | Chromium           | 4-27       | 0.5 (metal)<br>0.05 (CR+6)<br>Suspected carcinogen-NTP & IARC<br>See Sections 5 & 7 | 1 (metal)                              | 7740-47-3 7740-02-0 7429-90-5 7439-96-5 7439-98-7 7740-21-3 |
|        | Nickel<br>Aluminum | 0.09-1     | 1 (metal) Suspected carcinogen-NTP & IARC See Sections 5 & 7                        | 1 (metal)                              |                                                             |
|        |                    | ,          | 10 (dust)<br>5 (welding fume)                                                       | N/A<br>5 (dust)<br>5 (fume)            |                                                             |
|        | Manganese          |            | 5 (dust)<br>1 (fume)                                                                |                                        |                                                             |
|        | Molybdenum         | 0.14-1.5   | 5                                                                                   | 5                                      |                                                             |
|        | Silicon            | 0.14-1.0   | 10 (total dust)<br>5 (respirable dust)                                              | 15 (total dust)<br>5 (respirable dust) |                                                             |
|        | Titanium           | 0.001-1.10 | 5 (dust)<br>(as TiO2)                                                               | 15<br>(as TiO2)                        | 7740-36-6                                                   |
|        | Vanadium           | 0.15-1.10  | 0.05 (dust)<br>0.05 (fume)<br>Values for V205                                       | 0.5 (dust)<br>0.1 (fume)               | 7740-02-2                                                   |
| 2. PHY | SICAL DATA         |            | Not applica                                                                         | ble.                                   | <del></del>                                                 |

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective type and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### FFFFCTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e., respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Titanium, its oxides and carbide are physiologically inert and present no adverse health effect.

Molybdenum is not foreseen as a hazard in the present context. Though molybdenum has caused toxicity (anemia and poor growth) in farm animals, there is not data documenting toxicity to humans due to industrial exposure.

Vanadium dusts cause a persistent cough which develops after 5 hours of exposure and may last up to 10 days. Pulmonary irritation also results from vanadium, but there are no deviations in pulmonary function or other laboratory tests.

# EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL

DATE: NOVEMBER 5, 1985

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A

An ALCO Standard Company

7500 Grand Division Avenue • Clevellinit, Onio 44125 • 216/441 6600

# MATERIAL SAFETY DATA

CHEMTREC CHEMICAL TRANSPORTATION EMERGENCY

TELEPHONE NO .: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616

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**EMERGENCY** 

TELEPHONE NO. 412-339-5059

1. 1. 1

This MSDS applies to the following established steel grades, type, and/or trade named products:

GROUP IV: TOOL AND STAINLESS STEELS: 0-6 (OILGRAPH) AND TYPES: 902, 916, 905H, 905L, 918, 921

|    | MATERIAL      | శ (RANGE)              | ACGIH-TLV (Mg/M3)                                                                  | OSHA-PEL (Mg/M3)                                   | CAS #                                            |
|----|---------------|------------------------|------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------------|
|    | Iron          | > 50                   | 5 (oxide fume)                                                                     | 10 (oxide fume)                                    | 7739-89-6                                        |
|    | Nickel        | 0.15-51.0<br>0.02-0.60 | 1 (metal)                                                                          | 1 (metal)                                          | 7740-02-0<br>7740-47-3<br>7740-21-3<br>7439-96-5 |
|    | Chromium      |                        | 0.5 (metal<br>0.05 (Cr+6)<br>Suspected carcinogen-NTP & IARC<br>See Sections 5 & 7 | 1 (metal)<br>15 (total dust)<br>5 (respirable dust |                                                  |
|    | Silicon       | 0.10-1.4               | <pre>10 (total dust) 5 (respirable dust)</pre>                                     |                                                    |                                                  |
|    | Manganese     | 0.33-1.25              | 5 (dust)<br>1 (fume)                                                               | 5 (dust)<br>5 (fume)                               |                                                  |
| 2. | PHYSICAL DATA |                        | Not Applicable.                                                                    |                                                    | <del></del>                                      |

FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

#### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

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### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD OF VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e. respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| PREPARED UNDER | DIRECTION OF: | W.R. BELL | DATE:   | NOVEMBER 5, | 1985 |     |
|----------------|---------------|-----------|---------|-------------|------|-----|
| TELEPHONE NO.  | 216/441-6600  |           | SUPERSE | DES MSDS DA | TED: | N/A |

An ALCO Standard Company

7500 Grand Division Avenue • Cleveland, Onio 44125 • 216/441 6600

# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No. 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 412-339-5059

. . .

This MSDS applies to the following established steel grades, types, and/or trade named products:

GROUP V: STAINLESS STEEL TYPES 304N, 309, 309S, 310, 330, 362, 363

| 1. HA | AZARDOUS INGREDI | ENTS       |                                                                            |                                   |                    |
|-------|------------------|------------|----------------------------------------------------------------------------|-----------------------------------|--------------------|
|       | MATERIAL         | え(RANGE)   | ACGIH-TLV (Mg/M3)                                                          | OSHA-PEL (Mg/M3)                  | CAS #              |
|       | Chromium         | 3-29       | 0.5 (metal) 0.05 (Cr+6) Suspected Carcinogen-NTP & IARC See Sections 5 & 7 | 1 (metal)                         | 7740-47-3          |
|       | Nickel           | 72 (min.)  | 1 (metal) Suspected Carcinogen-NTP & IARC See Sections 5 & 7               | 1 (metal)                         | 7740-02-0          |
|       | Cobalt           | 1 (max.)   | 0.1                                                                        | 0.1                               | 7440-48-4          |
|       | Manganese        | 2 (max.)   | 5 (dust)<br>1 (fume)                                                       | 5 (dust)<br>5 (fume)              | 7439-96-5          |
|       | Silicon          | 1.5 (max.) | 10 (total dust)<br>5 (resp. dust)                                          | 15 (total dust)<br>5 (resp. dust) | 7740-21-3          |
|       | Aluminum         | 1 (max.)   | 10 (dust)<br>5 (welding fume)                                              | N/A                               | 74 <b>29-9</b> 0-5 |
|       | Titanium         | 0.6-2.75   | 5 (TiO2 dust)                                                              | 15 (TiO2)                         | 7740-36-6          |
|       | Niobium          | 0.7-1.2    | N/A                                                                        | N/A                               | 7440-25-7          |
|       | Iron             | 6-10       | 5 (oxide fume)                                                             | 10 (oxide fume)                   | 7439-89-6          |

PHYSICAL DATA 2.

Not Applicable.

FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

# DISCLAIMER

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes of many metals may produce a reaction known as "metal fume fever". Metals such as zinc and copper have been most associated with this condition, but it is suspected that other metallic fumes may also produce it. Metal fume fever symptoms consist of chills and fever (similar to and easily confused with flu symptoms), which begin a few hours after large exposures. Long term-effects of metal fume fever have not been noted.

CNRONIC: Excessive inhalation of nickel fumes have been associated with respiratory cancer. Also, nickel is a potential sensitizer, and thus may cause allergic reactions.

### 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL DATE: NOVEMBER 13, 1985

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A

metalsource\*
An ALCO Standard Company

7500 Grand Division Avenue • Circetting, Ohio 44125 • 216/441-6600

# MATERIAL SAFETY DATA

Chemtrect Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

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- 457 ::222222777744174 - 5:5454452222277744

Emergency

Telephone No. 412-339-5059

This MSDS applies to the following established steel grades, types, and/or trade named products:

GROUP VI: STAINLESS TYPES 317L, 317LX, 336, 337, 350, 444, 447, 448

ALLOY GRADES 4335MOD, 4340

|                | HAZARDOUS INGREDIENT                              | % (RANGE)                                                                                  | ACGIH-TLV (Mg/M3)                                         | OSHA-PEL (Mg/M3)                                                                              | CAS #                                                                           |
|----------------|---------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                | Chromium  Nickel  Molybdenum  Manganese  Silicon  | Chromium 30 (max.) 0.5 (metal) 0.05 (Cr+6) Suspect CarcinogenNTP & IARC See Sections 5 & 7 |                                                           | 1 (metal)                                                                                     | <b>7740-</b> 47-                                                                |
|                |                                                   | 2-80.45                                                                                    | 1 (metal) Suspect CarcinogenNTP & IARC See Sections 5 & 7 | 1 (metal)                                                                                     | 7740-02-0 7439-98-7 7439-96-5 7740-21-3 7440-48-4 7440-25-7 7740-02-2 7439-89-6 |
|                |                                                   | 0.75-10                                                                                    | 5<br>5 (dust)<br>1 (fume)                                 | 5 5 (dust) 5 (fume) 15 (total dust) 5 (resp. dust) 0.1 5 (Ta) 0.5 (V205 dust) 0.1 (V205 fume) |                                                                                 |
|                |                                                   | ese 2.15 (max.)                                                                            |                                                           |                                                                                               |                                                                                 |
|                |                                                   | 1 (max.)                                                                                   | 10 (total dust)<br>5 (resp. dust)                         |                                                                                               |                                                                                 |
|                | Cobalt                                            | 1 (max.)                                                                                   | 0.1                                                       |                                                                                               |                                                                                 |
|                | Nioblum/Tantalum                                  | 0.05-4.15                                                                                  | 5 (Ta)                                                    |                                                                                               |                                                                                 |
|                | Vanadium<br>Iron                                  | 1.10 (max.)                                                                                | 0.05 (V205)<br>(dust/fume)                                |                                                                                               |                                                                                 |
|                |                                                   | 0-97.2                                                                                     | 5 (oxide fume)                                            | 10 (oxide fume)                                                                               |                                                                                 |
| 2.             | PHYSICAL DATA                                     |                                                                                            | Not Applicable.                                           |                                                                                               |                                                                                 |
| <del></del> 3. | 3. FIRE AND EXPLOSION HAZARD DATA Not Applicable. |                                                                                            |                                                           |                                                                                               |                                                                                 |

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THREASHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive inhalation of nickel fumes has been associated with respiratory cancer. Also, nickel is a potential sensitizer, and thus may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fumes does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Excessive exposures to aluminum fume and dust have been associated with lung disease, but this effect is probably due to the simultaneous silica exposure.

Industrial exposure to copper fumes, dusts or mists results in metal fume fever with atrophic changes in nasal mucous membranes. Chronic poisoning results in Wilson's disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

### EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

# ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium (for example), the potential for exposure to chromium or nickel obviously increases as their precentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER THE DIRECTION OF: W.R. BELL DATE: NOVEMBER 12, 1985

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A

W///
metalsource\*
An ALCO Standard Company

7500 Grand Division Avenue • Cleveland, Ohio 44125 • 216/441-6600

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# MARSHLAL SEFEEN RETA

Chemtree (1988 05) transportation Emertancy

Telephone Nov: 800/424-9300; District of Columbia: 30 - 83-7616

Emergency Telephone No. 412-339-5059

This MSDS applies to the following established sized grades, types, and/or trade named products:

GROUP VII: TOOL AND STAINTISE STUDIES OF 1, 0-1, 502, 50 H. 905L, 516, 318, 971

| 1. | HAZARDOUS INGREDI            | ENTE (FARGE)  | ACG:H-TUV (Hc/M3)                                                                                                                       | OSHA-PEL (Mg/M3)                                                 | CAS #                                            |
|----|------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------|
|    | Nickel                       | 35-31         | 1 (metal) Suspect Carcinogan - NTP & TARG See Sections 5 & 7                                                                            | 1 (metal)                                                        | 770-02-                                          |
|    | Ch rom i um                  | 0.6 (max.)    | 0.5 (nota) 0.05 (fri6) Suspect Cardinogen-NTP & TARC See Sections 5 & 7 5 (dust) 1 (fume) 10 (total dust) 5 (rasp. dust) 5 (oxide fune) | 5 (dust) 5 (fume) 15 (total dust) 5 (resp. dust) 10 (oxide fume) | 7740-47-3<br>7439-96-5<br>7740-21-3<br>7439-89-6 |
|    | Manganese<br>Silicon<br>Iron | •             |                                                                                                                                         |                                                                  |                                                  |
|    |                              |               |                                                                                                                                         |                                                                  |                                                  |
|    |                              | 43-64.5       |                                                                                                                                         |                                                                  |                                                  |
| 2. | PHYSICAL DATA                |               | Not Applicable.                                                                                                                         |                                                                  |                                                  |
| 3. | FIRE AND EXPLOSIO            | N HAZARD DATA | Not Applicable.                                                                                                                         |                                                                  |                                                  |

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate cratective eye and face equipment unall be worn where there is a reasonable probability of injury that course prove today of the course of materials as welding, grinding).

PROTECTIVE GLOVES: Appropriate and a needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (LV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive inhalation of nickel fumes has been associated with respiratory cancer. Also, nickel is a potential sensitizer, and thus may cause allergic reactions. Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Industrial exposure to copper fumes, dusts or mists results in metal fume fever with atrophic changes in nasal mucous membranes. Chronic poisoning results in Wilson's disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

### 6. FMERGENCY AND FIRST AID PROCEDURES

if acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

# 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| PREPARED UNDER DIRECTION OF: | W.R. BELL | DATE:    | NOVEMBER 5, 1985 |     |
|------------------------------|-----------|----------|------------------|-----|
| TELEPHONE NO.                | 441-6600  | SUPERSED | ES MSDS DATED:   | N/A |

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7500 Grand Division Avenue • Cleverand, Ohio 44125 • 216/441 6600

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# MATERIAL SAFETY DATA

Chemirec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 412-339-5059

This MSDS applies to the following established steel grades, types, and/or trade named products.

GROUP VIII: STAINLESS AND SPECIAL HIGH ALLOY STEELS: 904L, 13-8MO, 155PH, 15-7MO, 17-4, 17-7, MO-Metal.

Waspalloy, 901

| 1.            | HAZARDOUS INGREDIENT |           |                                                                                   |                                   |           |
|---------------|----------------------|-----------|-----------------------------------------------------------------------------------|-----------------------------------|-----------|
|               | MATERIAL             | え (RANGE) | ACGIH-TLV (Mg/M3)                                                                 | OSHA-PEL (Mg/M3)                  | CAS #     |
|               | Chromium             | 2.25-23.0 | 0.5 (metal)<br>0.05 (Cr+6)<br>Suspect Carcinogen-NTP & IARC<br>See Sections 5 & 7 | 1 (metal)                         | 7740-47-  |
|               | Nickel               | 3-77      | 1(metal) Suspect Carcinogen-NTP & IARC See Sections 5 & 7                         | 1 (metal)                         | 7740-02-0 |
|               | Cobalt               | 0.5-15    | 0.1                                                                               | 0.1                               | 7740-48-4 |
|               | Manganese            | 2 (max.)  | 5 (dust)<br>1 (fume)                                                              | 5 (dust)<br>5 (fume)              | 7439-96-9 |
|               | Molybdenum           | 2-10      | 5                                                                                 | 5                                 | 7439-98-7 |
|               | Copper               | 6 (max.)  | 0.2 (fume)<br>1(dust)                                                             | 0.1 (fume)<br>1 (dust)            | 7740-58-0 |
|               | Silicon              | 1 (max.)  | 10 (total dust)<br>5 (resp. dust)                                                 | 15 (total dust)<br>5 (resp. dust) | 7740-21-3 |
|               | Aluminum             | 0.05-1.6  | 10 (dust)<br>5 (welding fume)                                                     | N/A                               | 7429-90-5 |
|               | Titanium             | 0.05-3.2  | 5 (TiO2 dust)                                                                     | 15 (TiO2)                         | 7740-36-6 |
|               | Wolfram (Tungsten)   | 0.2-1     | N/A                                                                               | N/A                               | 7440-33-7 |
|               | Iron                 | 0-92      | 5 (oxide fume)                                                                    | 10 (oxide fume)                   | 7439-89-6 |
| $\frac{1}{2}$ | PHYSICAL DATA        |           | Not applicab                                                                      | ole.                              |           |

# 3. FIRE AND EXPLOSION HAZARD DATA

Not applicable.

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**VENTILATION:** Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be wornwhere there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### 5. PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

#### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes and dust may cause irritation and ulceration of mucuous membranes. Chromium fumes may also cause cancer in the respiratory system. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. Also, chromium is a potential sensitizer, and thus may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fumes does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

# EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL DATE: NOVEMBER 6, 1985

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A

metalsource:
An ALCO Standard Company

2500 Grand Division Avenue • Chivel of One 11125 • 216 dtt 1 000



# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 412-339-5059

This MSDS applies to the following established steel grades, types, and/or trade named products:

GROUP IX: HIGH TEMPERATURE ALLOYS: Monel 400, Monel K500

| MATERIAL  | ₹ (RANGE)   | ACGIH-TLV (Mg/M2)                                            | OSHA-PEL (Mg/M3)                  | CAS #     |
|-----------|-------------|--------------------------------------------------------------|-----------------------------------|-----------|
| Nickel    | 68 (max.)   | 1 (metal) Suspect Carcinogen - NTP & IARC See Sections 5 & 7 | 1 (metal)                         | 7740-02-0 |
| Manganese | 1 (max.)    | 5 (dust)<br>1 (fume)                                         | 5 (dust)<br>5 (fume)              | 7439-96-5 |
| Copper    | 29.5 (max.) | 0.2 (fume)<br>1 (dust)                                       | 0.1 (fume)<br>1 (dust)            | 7740-58-0 |
| Silicon   | 4 (max.)    | 10 (total dust)<br>5 (resp. dust)                            | 15 (total dust)<br>5 (resp. dust) | 7740-21-3 |
| Aluminum  | 2.8 (max.)  | 10 (dust)<br>5 (welding fume)                                | N/A                               | 7429-90-5 |
| Iron      | 3 (max.)    | 5 (oxide fume)                                               | 10 (oxide fume)                   | 7439-89-6 |

# . FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

# SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

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THRESHOLD LIMIT VALUE (TLV)

PRIMARY ROUTE OF EXPOSURE

Inhalation of fumes from welding or burning; dusts from crimbing or sutting.

42.70

#### FFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as inicial func fever!. Though metals such as copper and time have been most associated with metal fume fever, it is associated with one authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons: Hamilton and Hardy: Industria Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e., respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel tumes have been associated with respiratory cancer. Both thromium and middel are porential sensitizers, and may cause allergic reactions.

Only after six to ten years of exposure to iron dust or fumes does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Niobium is highly toxic once it reaches the blood stream. Because it is poorly absorbed, it is less toxic from the gastrointestinal tract. It has been reasonably concluded from animal studies that small additional amounts of niobium from industrial exposure may have adverse health effects over the long term when added to the niobium consumed in the human diet, particularly when added to the respiratory tract.

Tantalum is inert toward body tissues and fluids and is consequently nontoxic after industrial exposure. Pulmonary fibrosis was presented by some Russian workers, but there was no reference to tantalum concentrations or degree of exposure.

Molybdenum is not foreseen as a hazard in the present context. Though molybdenum has caused toxicity (anemia and poor growth) in farm animals, there is not data documenting toxicity to humans due to industrial exposure.

Vanadium dusts cause a persistent cough which develops after 5 hours of exposure and may last up to 10 days. Pulmonary irritation also results from vanadium, but there are no deviations in pulmonary function or other laboratory tests.

Cobalt causes a dermatitis of the allergic sensitivity type at points of friction. Cobalt toxicity also results in a progressive, diffuse, interstitial pneumonia with a nonproductive cough, dyspnea on exertion, interstitial fibrosis and cell damage. Other workers have experienced a sensitized respiratory disease characterized by cough, wheezing and shortness of breath where upon removal from the environment, the symptoms subside.

# EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| PREPARED UNDER THE DIRECTION OF: | W.R. BELL    | DATE: NOVEMBER 8, 1985     |
|----------------------------------|--------------|----------------------------|
| TELEPHONE NO.                    | 216/441-6600 | SUPERSEDES MSDS DATED: N/A |

TIS METALSOURCE An ALCO Standard Company

7500 Grand Division Avenue • Cirvo and Obio 44125 • 2167441 6600

# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 600-424-9300; District of Columbia: 202-483-7616

POWERTAL:

နိုင့်ရှိနိုင့်မည်နှင့် မွန်နှင့်<u>မည်သည်</u> မြိမာသည်။

Emergency

Telephone No. 419/862-2745

This MSDS applies to the following established grades, types, and/or trade named products:

BERYLLIUM COPPER ALLOY 3, UNS NO. C 17510 BERYLLIUM COPPER ALLOY 25, 190, UNS C 17200

| HAZARDOUS ING    | REDIENTS       |           | ACG1H-T | 'LV (Mg/M3) | 0\$   | HA-PEL (Mg/ | M3)   |
|------------------|----------------|-----------|---------|-------------|-------|-------------|-------|
| MATERIAL         | CAS #          | 운 (RANGE) | TLV     | TLV-STEL    | PEL   | CEILING     | PEAK  |
| For Alloy 25,190 | <u>)</u>       |           |         |             |       |             |       |
| Beryllium        | 7440-41-7      | 1.8-2.0   | 0.002   | N/A         | 0.002 | 0.005       | 0.025 |
| Copper (Fume)    | 7440-50-8      | Balance   | 0.2     | N/A         | 0.1   | N/A         | N/A   |
| (Dust & Mist)    |                |           | 1.0     | 2.0         | 1.0   | N/A         | N/A   |
| Cobalt           | 7440-48-4      | 0.2-0.35  | 0.1     | N/A         | 0.1   | N/A         | N/A   |
| For Alloy 3 add  | the following: |           |         |             |       |             |       |
| Nickel Metal     | 7440-02-0      | 1.4-2.2   | 0.1     | 0.3         | 1.0   | N/A         | N/A   |
| (Soluble)        |                |           |         |             | 1.0   | N/A         | N/A   |

### KEY:

ACGIH = American Conference of Governmental Industrial Hygienists.

PEL = Eight Hour Average Permissible Exposure Limit.

Ceiling = Not to be exceeded except for peak limit.

Peak = 30 minute maximum duration concentration above limit.

TLV = Eight hour Average Treshold Limit Value.

TLV-STEL = 15 Minute short term exposure limit.

(C) = ACIH Ceiling Limit - Not to be exceeded.

### EPA EMMISSION STANDARD (as Be)

0.01 Micrograms per cubic meter (30 day average) ambient air standard 10 grams/24 hours total site emission limit. NOTE: State and local regulations may vary.

| 2. | PHYSICAL DATA | Not Applicable. |
|----|---------------|-----------------|
|----|---------------|-----------------|

### FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

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The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular application, hazards connected with the use of the material or the results obtained from the use thereof. User assumes all risk, and liability of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

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No protective equipment or creating is required when handling colid forws. Approved high efficiency cartridge or supplied air respirator is required if beryllium in our concentrations exceeds OSHA standards.

When welding, merting and bastoms, dry grinding, dry sanding, polishing, or otherwise abrading the surface of beryllium alloys in a manner which generates finely divided particles, an exposure to airborne berylliumin excess of the occupational standard can occur. Under these conditions, local exhaust ventilation at the point of generation is the preferred method of control. The normal machining of beryllium alloys does not pose a problem of exposure to airborne beryllium; however, cast beryllium alloys must have the scale containing beryllium oxide, cleaned from the surface before machining to prevent potential exposure. Carinding or sanding operations under a liquid roolant do not pose an exposure potential; unless by recycling the liquid coolants, the concentrations of finely divided beryllium alloy reaches a point where particulate becomes airborne during its use. This source can be controlled by an in-line coolant centrifuge. Operations generating airborne beryllium must be air sampled to determine exposure levels. Where exposure data indicates, medical surveillance should be conducted.

# PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting. Irritation of eyes from dusts and fumes.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Dusts and fumes irritate the eyes, nose, and throat. Symptoms may include cough, metallic taste in the mouth, fever, fatigue, and nausea. CHRONIC: Inhalation may cause berylliosis, a serious chronic lung disease with cough, chest pain, shortness of breath, weight loss, weakness, and fatigue. FIRST AID: Remove from exposure and consult a physician. Prolonged skin contact with nickel may sensitize the skin and produce a rash.

Hazard communication regulations of the occupational safety and health administration require that caution labels for materials listed as potential carcinogens in either the International Agency for Cancer Research monograph series or the National Toxicology Program annual report on carcinogens must contain a cancer warning. Beryllium and nickel have been so listed based principally on animal tests and therefore, as shipped, this material bears a label identifying it as a potential cancer hazard.

# 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

# ADDITIONAL COMMENTS

### SPILL AND DISPOSAL PROCEDURES:

Beryllium containing scrap is normally recycled. In cases where this is not justified, solid material may be landfilled.

Because of the potential initiation hazard inherent in the handling of fine, dust-like material (such as baghouse fines) it is recommended it be: (1) sealed in two plastic bags, (2) placed in a sound container, (3) labeled as a "beryllium containing material", and (4) shipped to either a recycling facility or an approved hazardous waste disposal site. If greater than one pound of such metal dust or powder is released into the environment, report the spill immediately to the National Response Center (800) 424-8802.

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 and 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| TELEPHONE NO. 216/ | /441-6600 | SUPERSEDES MSDS DATED: | N/A |
|--------------------|-----------|------------------------|-----|

metalsource
An ALCO Standard Company

7500 Grand Division Acenue + Cleverand, Open 341,25 • 216/431 6600

# MATERIAL SAFETY DATA

Chemtree Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Pro 190mEdTels\_\_\_\_

Emergency

Telephone No. 216/622-5000

This MSDS applies to the following established grades, types, and/or trade named products:

CATEGORY (1) DUCTILE IRON ASTM A-536 ALLOY DESIGNATIONS: Gr. 60-40-18/65-45-12/80-55-C6/100-70-03/120-90-02

CATEGORY (2) GREY CAST IRON ASTM A-48 ALLOY DESIGNATIONS: C1-30, C1-30, 35, 40, 45, 50, 55

| 1. | HAZARDOUS INGRED   | IENTS                 |                     | PERMISSIBLE AIR LE                          | EVEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----|--------------------|-----------------------|---------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | MATERIAL           | CAS #                 | % (RANGE)           | ACGIH-TLV (Mg/M3)                           | OSHA-PEL (Mg/M3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|    | Iron               | 7439-83-6             | Balance             | 5 (fume)                                    | 10 (fume)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|    | Chromium           | 7740-47-3             | .01-18              | .05 (Cr V1-Compounds)                       | 0.1 (Cr VI-Compounds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|    | Nickel             | 7440-02-0             | .01-4.5             | <pre>1.0 (metal-insoluble</pre>             | 1.0 (metal-insoluble compounds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|    | Carbon             | 7440-44-0             | 1.0-4.5             | N/A                                         | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|    | Silicon            | 7740-21-3             | 20-4.0              | 10 (totel dust)<br>5 (resp. dust)           | 15 (total dust)<br>5 (resp. dust)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | Molybdenum         | 7439-98-7             | .01-2.5             | 5 (Soluble compounds) 10 (Insol. compounds) | 5 (soluble compounds)<br>15 (Insol. compounds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|    | Manganese          | 7439-96-5             | .20-1.3             | 1.0 (fume)                                  | 5.0 (ceiling value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|    | Copper             | 7440-50-8             | .01-1.2             | 0.2 (fume)                                  | 0.1 (fume)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|    | Titanium           | 7440-32-6             | 0.01-0.06           | N/A                                         | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|    | Aluminum           | 7429-90-5             | 0.01-0.05           | N/A                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|    | Phosphorous        | 7423-14-0             | 0.01-0.8            | .1                                          | .1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|    | Sulphur            | 7704-34-0             | 0.02-0.18           | 5                                           | 13 (sulphur dioxide)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|    | Trace Elements     | N/A                   | <1.0                | N/A                                         | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|    | NOTE: See addition | nal comments on the I | back under item #7. |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2. | PHYSICAL DATA      |                       |                     | Not Applicable.                             | The state of the s |
| 3. | FIRE AND EXPLOS    | ION HAZARD DATA       |                     | Not Applicable.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

### DISCLAIMER

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VENTILATION: Local exhaust should be used to keep worker exposure 5-low accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

# PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examination of those exposed to iron dust have not indicated any disability.

Excessive or prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

Excessive and repeated inhalation of chromium fumes or dust may cause severe irritation, ulceration or cancer in the respiratory system - nose, throat and lungs. It is generally believed that the hexavalent forms of chromium (Cr+6) are responsible for these effects. It is uncertain whether metallic chromium in dust form can cause the same effects noted above. Until this issue is resolved, engineering controls or personnel protective equipment (i.e., respirators) should be utilized to assure exposures are not excessive. Similarly, excessive inhalation of nickel fumes have been associated with respiratory cancer. Both chromium and nickel are potential sensitizers, and may cause allergic reactions.

Molybdenum is not foreseen as a hazard in the present context. Though molybdenum has caused toxicity (anemia and poor growth) in farm animals, there is not data documenting toxicity to humans due to industrial exposure.

Excessive exposures to aluminum fumes and dust have been associated with lung disease, but this effect is probably due to the simultaneous silica exposure.

Industrial exposure to copper fumes, dusts or mists results in metal fume fever with atrophic changes in masal mucous membanes. Chronic poisoning results in Wilson's disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

# EMERGENCY AND FIRST AID PROCEDURES

if acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

# 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. (See Sections 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

| PREPARED UNDER DIRECTION OF: | W.R. BELL    | DATE: NOVEMBER 6, 1985     |
|------------------------------|--------------|----------------------------|
| TELEPHONE NO.                | 216/441-6600 | SUPERSEDES MSDS DATED: N/A |

CERRO COPPER PRODUCTS COMPANY MSDS NUMBER - COPC-00-0361 APPROVALS: EVALUATION EXTREM 



7500 Grand Division Avenue • Closers, 2 Onio 14125 • 216/441 6600

# MATERIAL SAFELY DATA

Chemtrec Chemical Transporation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 415-271-5391

This MSDS applies to the following established steel grades, type and/or trade named products:

ALUMINUM ALLOYS - ALL FORMS

1XXX THROUGH 7XXX SERIES

| 1. | HAZARDOUS ING | REDIENTS   | & COMPOSITION                                | 1001. 05 10011                            |                                    |
|----|---------------|------------|----------------------------------------------|-------------------------------------------|------------------------------------|
|    | BASE METAL    | CAS NUMBER | <pre> % COMPOSITION BY WEIGHT (RANGE) </pre> | 1984-85 ACGIH<br>TLV (Mg/M3)*             | OSHA-PEL (Mg/M3)                   |
|    | Aluminum      | 7429-90-5  | 80.0-99.7                                    | 10.0 as metal dust and oxide              | Not established                    |
|    |               |            |                                              | 5.0 as welding fume                       | Not established                    |
|    | Cobalt, Co    | 7440-48-4  | 1.0-10.0                                     | 0.1                                       | 0.1                                |
|    | Copper, Cu    | 7440-50-8  | 1.0-10.0                                     | 0.2, as fume                              | 0.1, as fume                       |
|    | lron, Fe      | 1309-37-1  | 1.0-10.0                                     | 5.0, as fume                              | 10.0, as fume                      |
|    | Magnesium, Mg | 1309-48-4  | 1.0-10.0                                     | 10.0, as fume                             | 15.0, as fume                      |
|    | Manganese, Mn | 7439-96-5  | 1.0-20.0                                     | 1.0, as fume                              | 5.0 Ceiling                        |
|    | Silicon, Si   | 7440-21-3  | 1.0-20.0                                     | 10.0, as total dust<br>5.0, as resp. dust | Not established<br>Not established |
|    | Tin, Sn       | 7440-31-5  | 1.0-10.0                                     | 2.0, as oxide and metal                   | 2.0 as inorganic compounds         |
|    | Zinc, Zn      | 1314-13-2  | 1.0-10.0                                     | 5.0, as fume                              | 5.0, as fume                       |

KEY: #TLV = Threshhold-Limit-Value

NOTE: Aluminum alloys may be comprised of all or variations of the alloys shown here. In addition, the

welding of aluminum alloys may produce the products listed in Section VII, #7.

2. PHYSICAL DATA Not Applicable.

3. FIRE AND EXPLOSION HAZARD DATA Not Applicable.

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VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control corresposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.134.

EYE PROTECTION: Appropriate protective eve and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as wolding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume f-ver, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive exposures to aluminum fume and dust have been associated with lung disease, but this effect is probably due to the simultaneous silica exposure. Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinsons Disease. Cobalt causes a dermatitis of the allergic sensitivity type at points of friction. Cobalt toxicity also results in a progressive, diffuse, interstitial pneumonia with a nonproductive cough, dyspnea on exertion, interstitial fibrosis and cell damage. Other workers have experienced a sensitized respiratory disease characterized by cough, wheezing and shortness of breath where upon removal from the environment, the symptoms subside.

The toxicity of inorganic tin compounds is generally low. Exposure to the dust or fumes of tin oxides can result in a benign pneumoconiosis called stannosis. No tissue reaction or pulmonary dysfunction has been associated with this lung condition.

Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

### 6. FMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

# 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Sections 4 & 5 for further information.

The aluminum itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

- 1. Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen.
- Finely divided aluminum will formexplosive mixtures in air. It will also form explosive mixtures in air in the presence of bromates, iodates, or ammonium nitrate.
- 3. When remelting aluminum scrap, entrapped moisture or the presence of strong oxidizers such as ammonium nitrate could cause an explosion. This applies to the collection of moisture in sow cavities as well. Moisture must be driven off prior to remelting.
- 4. Do not touch cast aluminum metal or heated aluminum product without knowing metal temperature. Aluminum experiences no color change during heating. If metal is hot and touched, burns can result.
- 5. Aluminum powder must be packaged and shipped as a Flammable Solid, UN1396.
- 6. Hard alloy ingots in the 2000 and 7000 series must be stress- relieved to prevent explosion when sawed.
- The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infrared radiation and ultra-violet radiation.

| PREPARED UNDER DIRECTION OF: | W.R. BELL    | DATE: NOVEMBER 6, 1985     |  |
|------------------------------|--------------|----------------------------|--|
| TELEPHONE NO.                | 216/441-6600 | SUPERSEDES MSDS DATED: N/A |  |
|                              |              |                            |  |

# MSDS NUMBER - CCPC-00-0362



1.7.54

7500 Grand Division Avenue • Cleveland, Onio 44125 • 216/441 6600

# MATERIAL SAFETY SATA

[New trol Chambeal Transportation Energency Tels\_trans No.: 300-42--3300; District of Columbia: 202-483-7616

Emerganov Telephone No. 412-339-5059

This HSDS applies to the (cilowing established steel grades, types, and/or trade named products:

ALLOY STEELS - ALL FORMS INCLUDING NAK-55, NAK-80 (WELDING ROD), PDS-5, CARBON, STAINLESS, ALLOY & TOOL STEELS NOT LISTED ELSEWHERE.

| HAZAPDOUS INGRE   | EDIENTS    |                |                                                                                    |                                        |
|-------------------|------------|----------------|------------------------------------------------------------------------------------|----------------------------------------|
| MATERIAL          | CAS NUMBER | MAX 2 (WEIGHT) | ACCIH-TLV (Mg/M3)                                                                  | OSHA-PEL (Mg/M3)                       |
| Base Metal:       |            |                |                                                                                    |                                        |
| Iron (Fe)         | 7439-89-6  | Balance        | 5 (oxide fume)                                                                     | 10 (Iron Oxide Fume)                   |
| Alloving Elements | <b>:</b>   |                |                                                                                    |                                        |
| Carbon (C)        | 7440-44-0  | 1 5            | Name Listed                                                                        | None Listed                            |
| Manganese (Mn)    | 7439-96-5  | 32.0           | 5 (dust) 1 (fume)                                                                  | 5                                      |
| Phesphorus (P)    | 7723-14-0  | 1.5            | 0.1                                                                                | 0.1                                    |
| Sulfur (S)        | 7704-34-9  | 0.4            | 5                                                                                  | 13 (Sulfur Dioxide)                    |
| Silicon (Si)      | 7740-21-3  | 4.0            | <pre>10 (total dust) 5 (respirable dust)</pre>                                     | 10 (total dust)<br>5 (respirable dust) |
| Chromium          | 7740-47-3  | 11.5           | 0.5 (metal)<br>0.05 (Cr+6)<br>Suspect carcinogen -NTP & TARC<br>See sections 5 & 7 | 1                                      |
| Molvbdenum (Mo)   | 7439-98-7  | 2.0            | 5                                                                                  | 15 (Insoluble Compounds)               |
| Copper (Cu)       | 7740-58-0  | 2.0            | 0.2 (Cu Fume)                                                                      | 0.1 (Fume), 1 (Dust)                   |
| Nickel (Ni)       | 7740-52-0  | 45.0           | 1 (Soluble Nickel Compounds) Suspect carcinogen-NTP & IARC See Sections 5 & 7      | 1                                      |
| Vanadium (V)      | 7740-02-2  | 5.0            | 0.05 (V205) (dust/fume)                                                            | 0.5 (dust) 0.1 (fume)                  |
| Aluminum (A1)     | 7429-90-5  | 1.3            | 10 (dust) 5 (welding fume)                                                         | None Listed                            |
| Niobium (Nb)      | , , , , ,  | 0.3            | 5 (Ta)                                                                             | None Listed                            |
| Boron (B)         | 7440-42-8  | 0.1            | 10 (oxide)                                                                         | 15 (oxide)                             |
| Titanium (Ti)     | 7440-36-6  | 3.0            | 15 (Ti oxide) 10 (total dust)                                                      | 15 (Dioxide)                           |
| Nitrogen (N)      |            | 0.025          | 9                                                                                  | 9 (Dioxide) 29 (Trifluorid             |
| Tantalum (Ta)     | 7440-25-7  | 0.01           | 5                                                                                  | 5                                      |
| Cobalt (Co)       | 7440-48-4  | 0.02           | 0.1                                                                                | 0.1 (Metal Fume & Dust)                |
| Lead (Pb)         | 7439-92-1  | 0.5            | 15 (inorganic lead compounds,<br>dust, and fume)                                   | 0.05                                   |
| Tungsten (W)      | 7440-33-7  | 7.0            | 5 (10 STEL)                                                                        | 5 (Insoluble) 1 (soluble)              |
| Calcium (Ca)      | 1305-78-8  | 0.05           | 5 (axide)                                                                          | 5 (as Oxide)                           |
| Arsenic (As)      | 7440-38-2  | 0.01           | 0.2                                                                                | 0.01                                   |
| Zîrconium (Zr)    | 7440-67-7  | 0.2            | 5                                                                                  | 5                                      |
| Antimony (Sb)     | 7440-36-0  | 0.01           | 0.5                                                                                | 0.5                                    |
| Zinc (Zn)         | 7440-66-6  | 0.01           | 5 (oxide fume)                                                                     | 5 (oxide fume)                         |
| Tin (Sn)          | 7440-31-5  | 0.04           | 2.0 (oxide & inorganic compounds)                                                  | 2                                      |
| Rare Earths (Ce)  | N.A.       | 0.03           | None Listed                                                                        | None Listed                            |
| Coatings:         |            |                |                                                                                    |                                        |
| Iron (Fe)         | 7439-89-6  | 2.1            | 5 (axide fume)                                                                     | 10 (Oxide Fume)                        |
| Phosphorus (P)    | 7723-14-0  | 0.22 ,         | 0.1                                                                                | 0.1                                    |
| \$.11.0m (\$.)    | 1747-71-3  | 1 -            | <ul><li>10 (tota cost)</li><li>5 (respirable dust)</li></ul>                       | 10 (rotal dust)<br>5 (respirable dust) |
| Chromium (Er)     | 7740-47-3  | 0.05           | 0.5 (metal)<br>0.05 (0+6)<br>Suspect carcinogen NTP & IARC<br>See Sections 5 & 7   | 1                                      |
| Nickel (Ni)       | 7740-58-0  | 1.3            | 1 (Sol. nickel compounds) Suspect carcinogen NTP & HARC See Sections 5 & 7         | 1                                      |
| Atuminum (Al)     | 7429-90-5  | 11.0           | 10 (dust) 5 (Welding fume)                                                         | None Listed                            |
| Lead Pb)          | 7439-92-1  | 12.0           | 15 (inorganic lead compounds, dust, and fume)                                      | 0.05                                   |
| Antimony (Sb)     | 7440-36-0  | 0.08           | 0.5                                                                                | 0.5                                    |
| Zinc Zn/          | 7440-06-6  | 36.0           | 5 (oxide fume)                                                                     | 5 (oxide fume)                         |
| Tir (Sn)          | 7440-31-5  | 1.4            | 2.0 (oxide & inorganic compounds)                                                  | 2                                      |
| Magnesium (Mg)    | 7439-95-4  | 0.04           | 10.0                                                                               | 15 (oxide fume)                        |
| Cadmium (Cd)      | 7440-43-9  | 0.02           | 0.05 (0.2 STEL) (dust)                                                             | 0.02                                   |

### TICHLAIMER

9. furnish no Material Safet, Cata Sheets THE METALSC RIE CORPORATION MAKES NO WAFFANTIES, expressed or inclied, texond those contained in our Standard Terms, Custom and Jungitions of Sale as published on the Face asd Feverse of all involves including, but not insisted to, implied warranties of merchantacifity and/or fitness for a particular surports.

The information contained in this Material Safety Data Short (MSDS) is believed to be correct, but no representations, guarantees or narranties of any kind are made as to its accuracy, suitability for particular application, hazards connected with the use of the naterial or the results obtained from the use thereof. User assumes all risk and Napility of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Metalsource to be an "article" within the meaning of Title 29 of the Code of federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are or may be required.

### PHYSICAL DATA

Not Applicable.

# 3. FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 25 CFR 1910.134.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn where there is a reasonable probabilit, of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

### 5. PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

inhalation of fumes from wolding or burning; dusts from grinding or cutting.

N/A

### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons: Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever livery similar to and easily confused with flu symptoms), which come on a few hours after large exposures. Long-term effects of metal fume fever have not been noted.

CHRONIC: Excessive inhalation of nickel fumes has been associated with respiratory cancer. Also, nickel is a potential sensitizer, and thus cay cause allergic reactions.

Only after six to ten years of exposure to iron dust or fumes does one present any kinns of pneumoconforis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles Parkinson's Disease.

Excessive exposures to aluminum fume and dust have been associated with lung disease, but this effect is probably due to the simultaneous silica exposure.

industrial exposure to copper fumes, dusts or mists results in motal fume fever with atrophic changes in nasal mucous membranes. Chronic poisoning results in Wilson's disease, characterized by a nepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

Excessive and prolonged overexposure to cobalt may cause an asthma-like disease with cough and dysphea.

### 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to funes occurs, remove victim from the adverse environment immediately and seek medical attention.

### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus when welding or cutting products containing chromium for example), the putential for exposure to chromium or nickel increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures he evaluated by a competent industrial hygicalst. See Sections 4.6.5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated to a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER THE DIRECTION OF

wir. BELL

DATE: NOVEMBER 12, 1985

TELEPHONE NO.

.16/441-6600

SUPERSEDES MSDS DATED: N/A

An ALCO Standard Company

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HAZARDOUS DECOMPOSITION OR SYPRODUCTS: Metal fume.

SPECIAL PROTECTION INFORMATION

FIRE AND EXPLCSION HAZARD DATA

identified as potential human carcinogens.

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HAZARDOUS INGREDIENTS

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PHYSICAL DATA

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INCOMPATIBILLITY (MATERIALS TO AVOID): Acids, bases, and oxidizers.

SIDEIS :YTIJIBATZ

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical materias

ity of injury that can be prevented by such eculoment isuch as welding, grinding).

EXE PROTECTION: Appropriate protective eve and face equipment shall be worn where there is a reasonable probabil-

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VENTILATION: Local exhaust vertilation should be used to keep worker exposure below accepted exposure limits

Title 29 of the tode of Federal Regulations, Section 1910,1200 at seq. This MSD is intended to be used solety for the purpose of selisfying informational requests made pursuant to that requirement. Compliance with all applicable federal, state, and focal laws and regulations remains the responsi-bility of the user, and the user, and regulations remains the responsi-bility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described berein, as all aspects of its operation, and to determine it or where precausings in additional control of the provided settings. ya goʻqi' spe bicoqici qesetipeq ili tyis k2D2 si covalqekeq pA Nessjanice io pe de jisisisi, mishinin spe membe and liability of any use, processing or handling of any material. Mariations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsitions that user and remain at its sole discretion. nnected with the use of the material or the results obtained from the use thereof. User assumes all risk, The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representa-tions, guarantees or watrantles of any kind are made as to its accuracy, suitability for particular application,

By furnishing Material Safety Data Sheets THE METALSOURCE CORPORATION MAKES NO WARRANTIES, expressed or implied, beyond those contained in our Standard Terms, Customs and Conditions of Sale as oublished on the face and Reverse of beyond those contained in our Standard Terms, Customs and Conditions of merchantability and/or fitness for a particular DISCLAIMER

NOTE: Antimony, trioxide, beryllium, cadmium, chromium, cobalt-chromium alloy, lead and mickel have been

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 $^{(1)}$  American Conference of Governmental Industrial Mygienists; TLV = Threshold Limit Value.

RESPRENTORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while free are being instituted, appropriate NIDSM approved respirators shall be used, and selected according to

SPECIAL FIRE FIGHTIMG PROCEDURES: Solid massive form is not combustible. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat, flames, cnemical reaction, or in contact with powerful oxidizers. Use special mixtures of dry chemical or sand. Firefighters should wear self-contained breathing.

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29 CFR 1910,134,

COMDITIONS TO AVOID: Stable under normal conditions of transport and storage. Molten metal may react viplently

THRESHOLD LIMIT VALUE (TLV)

PRIMARY ROUTE OF EXPOSURE

Inhalation of funes from welding, heating or turning; dusts from grinding, buffing or cutting.

ACUTE: Excessive inhalation of funes from many metals can produce an acute reaction known as imetal fune fever!. Though netals such as copper and zinc have been most associated with metal fune fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Bauic Science of Reisons; Hamilton and Hards: Industrial Toxicology: The Bauic Science of Reisons; Hamilton and Hards: Industrial Toxicology: that other metallic funes may produce this condition. Supports consult of childs and five of virty similar to and so. The conduct with the control of the some units of the product function of the respective functions of the following metallic some units of the following function of the following function of the following function of the following functions of

ADMINUM - Extensive exposure to alumenum fune and durantal over assist and with fund disease, but this effect is properly our terrimultaneous silica exposure.

ANTIMONY - Antimony and its compounds are irritating to the ower and nucous membranes and are systemic colsons. Effects are reported to include metallic tasts in the mouth, voniting, colid, for of apertite and woight, and clarrera. In addition, demartis may result which starts as an inflammation of the nair follicles and can progress through pus formation and sloughing to leave a contracted scan.

BERYLLIUM - inhalation of benyilium dust or fume may result in the produce of an acute or chronic systematic disease depending upon the level of exposure and the benyilium compound involved. Granulomatous lesions of the skin, liver, kidneys, spleen, and lymph nodes have been reported.

Sample to the lungs may be in both the acute and chronic forms, both of which have similar sions and symptoms. These include a relatively non-productive cough, progressive difficulty in breathing, loss of abhetite, and loss of weight. The major difference between the two is the suddeness of onset and the rate of progression. In the acute form, the symptoms abhear in several hours to several weeks after exhosure and there is usually rapid progression of signs including dysphea, andrexia, and extreme weight loss. Complete recovery is possible and fatal cases usually result from acute heart disease. In chronic beryllium disease, the symptoms of signs are generally cliaved in their onset and are needs/sitent in nature. They may be trigogreed or aggravated by stresses such as pregnancy, respiratory infection, and thyrotoxicosis. In the progression of the disease, symptoms of neart disease may occur.

Beryllium is also a suspected human carcinogen and has caused cancer in laboratory animals.

CADMIUM - inhalation of cadmium fumes may cause respiratory irritation with a sore, dry throat and a metallic taste followed by a cough, thest pain, and difficulty in breathing. Bronchitis, pneumonitis, and pulmonary edema have been reported as a result of the irritation of the fumes. Headaches, dizziness, loss of appetite, and weight loss have also been reported and the liver, kidneys and bone marrow may be injured by the presence of the metal.

Continued exposure to lower levels of cadmium has resulted in chronic poisoning characterized by incoversion line damage and kidney damage. A single, nightlevel exposure to cadmium can cause severe lung irretation which be fatal. Cadmium is also a suspected human carcinogen.

CHROMIUM - In some workers, chromium compounds act as allergens and may cause dornatitis and may also product pulmonary sensitization. Ehromic acid and chromates have a direct corrosive effect on the sain and the nucounembrances of the upper respiratory tract. Although name, there may be the possibility of skin and pulmonary

IARC has determined that there is sufficient evidence of increased lung cancer among workers in the chromater producing industry and possible chromium alloy workers. This occermination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

COBALT - Cotalt has been reported as causing hypersensitization type dermatitis in individuals who are susceptible. Animal studies have snown that particulate cobalt is an acutely irritating substance and industrial exposures, possibly combined with small amounts of silica, are reported capable of producing serious pneumoconiosis which is initially of an insidious nature.

COPPER - Melking, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present potentially significant health hazards. Fumes of copper may cause metal fume fever with flulike symptoms and skin and hair discoloration. While industrial dermalitis has not been reported, Leratinization of the hands and the soles of the feet has been reported. Systematically as well, copper dust and fume cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausca.

IRON - The inhalation of iron oxide fumes or dust may cause an apparent benign pneumoconiosis which is called siderosis. This disease is reported to be disabling, but makes x-ray diagnosis of other lung conditions difficult or impossible.

LEAD - SHORT TERM EXPOSURE: Lead is an accumulative poison. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatique, sleep disturnance, headache, aching sones and muscles, constipation, abdominal bains, and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to solzures,

LEAD - LONG TERM EXPOSURE: Long term exposure can result in a buildup of lead in the body and more severe symptoms. These include anemia, pale skin, a blue line at the gum margin, decreased handgrip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. Prolonged exposure may also result in xidney damage. If the nervous system is affected, usually due to very high exposures, the resulting effects include severe headache, convulsions, coma, delirium, and death. Alcohol indestion and onlysical exertion may bring on symptoms. Continued exposure can result in decreased fertility and/or increased changes of miscarriage or birth defects.

MANGANESE - Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

NICKEL - The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as "nickel itch" which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning, but nickel has been identified as a suspected carcinogen.

SILICON - Accumulation in lungs may be responsible for benign pneumocomiosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms.

TIN - The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis which is reported not to be disabling.

ZINC (AS OXIDE) - Zinc is very low in toxicity but inhalation of fumes may cause "metal fume fever". Onset of symboloms have be delayed 4-12 hours and include invitation of the nose; much and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-48 hours and leave no effect.

NOTE. Antimony trioxide, peryllium, cadmium, chromium, copalt-chromium alloy, lead and nickel have been identified as potential human carcinogens.

### 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention. EYE CONTACT: Flush well with running water to remove particulate. Get modical attention. SKIN CONTACT: Jacuum off excess dust. Wash well with yoar and water. INGESTION: Seek medical attention if large quantities of material have been ingested.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: No special precautions are necessary for spills of built material. If large quantities of dust are spilled, remove by vacuuming or wet tweeping to prevent heavy concentration of airborne dust. If liquids lacids or bases) containing solubilized metal are spilled evacuate unprotected personnel from area. Absorb liquid by means of verniculity, dry sand or similar material. Follow federal, state, and local regulations concerning the disposal of waste.

WASTE DISPOSAL METHOD: Dispose of in accordance with federal, state, and local regulations. Cleanup personnel should mean respirators and protestive clothing. Ventilate area of release.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store material away from incompatible materials and keep dust from incompatible materials and keep dust

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| •    | #. 50 21-01                                   |       |               | 0£10                                    | -       | -        | 05:0                | £3.0                                         | 1016<br>2010<br>2010                                 |       |          |             | -                     | \$81.55<br>6#1.55<br>6#1.55<br>991.55<br>6.1.55<br>6.1.55<br>6.1.55<br>6.1.55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Pacche Control of Pacche Control of Pacch Control of Pacche Copper Silver Bearing Copper Silver Bearing Copper Programming Copper Programming Copper Pacche                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 000310<br>002410<br>002410<br>002410<br>002510<br>002510<br>002110<br>002110                                                                                   |
| •    | #. 50 21-01                                   |       | 11.0          | 0 6 0                                   |         | -        | 0\$10               | £3:0                                         | 1016<br>2010<br>2010                                 |       |          |             |                       | \$8.755.65<br>94.755.65<br>99.755.65<br>99.755.65<br>91.755.65<br>91.755.65<br>91.755.65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Properties to the construction of the construc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 000940<br>00440<br>00440<br>00240<br>00240<br>00940<br>00940                                                                                                   |
| •    | 6,50 8<br>6,50 81-01<br>6,50 81               |       | 11.0          | 0£ 0                                    |         |          | 05 0                | \$3:0                                        | 2010<br>8001<br>2010<br>1016                         |       |          |             |                       | \$81.000<br>641.000<br>641.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.0000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.0000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.0000<br>640.00000<br>640.0000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.00000<br>640.000000<br>640.000000<br>640.0000000<br>640.0000000000 | Copper Parantal Office Parantal Office Person of Copper Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 002410<br>024400<br>024400<br>024100<br>024500<br>024500<br>024100<br>024100<br>024100<br>024100                                                               |
| •    | (8)10.0<br>- (8)10.0<br>                      |       | (1.0          | 08:0                                    |         |          | 05 ° 0              | £3:0                                         | 800.<br>                                             |       |          |             |                       | \$8166<br>02166<br>67166<br>89166<br>86166<br>6166<br>6166<br>6166<br>9166<br>9166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DH70 Barring DH70  Depper First Co.  "Go on Firs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0005/10<br>000 9/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10<br>0007/10                                         |
| •    | 4,50 8<br>- 50 81-01<br>- 50 81-01<br>- 50 81 |       |               | σε ο<br>-<br>-<br>-<br>-<br>-<br>-<br>- |         |          | 05°0                | £3:0                                         | 8001<br>                                             |       |          |             |                       | \$8166<br>02166<br>64166<br>99166<br>99166<br>9166<br>6166<br>6166<br>616                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | g. St. versonium compete control of the control of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 000510<br>001410<br>002410<br>002410<br>002410<br>002410<br>009441<br>009441<br>009441<br>0094410                                                              |
| •    | (8)10.0<br>- (8)10.0<br>                      |       |               | 0.0                                     |         |          | 05:0                | £3:0                                         | 800.<br>                                             |       |          |             |                       | \$8166<br>02166<br>67166<br>89166<br>86166<br>6166<br>6166<br>6166<br>9166<br>9166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Lun frontieres  Copyer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 000510<br>000510<br>00010<br>00010<br>00010<br>00010<br>00010<br>00010<br>00010<br>00010<br>00010<br>00000<br>00000                                            |
| •    | (8)10.0<br>- (8)10.0<br>                      |       |               | 0.00                                    |         |          | 05:0                | \$0.0<br>-<br>-<br>-<br>-<br>-<br>-<br>-     | 8001<br>                                             |       |          |             |                       | \$8166<br>64166<br>64166<br>89166<br>9166<br>6166<br>6166<br>6166<br>6166<br>6166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lung of the facts of the following of th                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 00C540<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710   |
| •    | (8)10.0<br>- (8)10.0<br>                      |       |               | 08:0                                    |         |          | 05:0                | \$0.0<br>                                    | 8001<br>                                             |       |          |             |                       | \$8166<br>64166<br>64166<br>99166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Ol Comern<br>Ol Comern<br>Di Comern                                                                                                                                                                                                                                                                                                                    | 00C5N2<br>00LN17<br>01Sn12<br>00Z110<br>00Z210<br>00Z210<br>00G112<br>00G112<br>00G112<br>00G112<br>00LS12<br>00LS12<br>00LS12<br>00LS12                       |
| •    | (8)10.0<br>- (8)10.0<br>                      |       |               | 0000                                    |         |          |                     | \$3.0<br>                                    | 8001<br>                                             |       |          |             |                       | \$8166<br>64166<br>64166<br>99166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Green from Exist<br>September 21 (1997) From Exist<br>September 22 (1997) From Exist<br>September 23 (1997) From Exist<br>September 24 (1997) From Exist<br>September 25 (                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 00C540<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710<br>00C710   |
| •    | (8)10.0<br>- (8)10.0<br>                      |       |               | 08:0                                    |         |          | 0\$10<br>           | £3:0                                         | 8001<br>                                             |       |          |             |                       | \$8166<br>64166<br>64166<br>99166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | microstosia vari meca.   incostosia vari meca.   microstosia vari meca.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 000540<br>001417<br>015110<br>002710<br>002710<br>007111<br>007111<br>009111<br>009011<br>002011<br>002011<br>002011                                           |
| -    | (8)1010<br>(720 05-52<br>(8)1010              | -     |               | -                                       |         |          |                     |                                              | 800.<br>- 800.<br>- 800.<br>10.0<br>- 10.0<br>- 10.0 | -     |          |             |                       | \$8166<br>02166<br>65166<br>89166<br>86166<br>6166<br>6166<br>6166<br>6166<br>40166<br>40166<br>40166<br>40166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Ol Comern<br>Ol Comern<br>Di Comern                                                                                                                                                                                                                                                                                                                    | 000510<br>00210<br>00210<br>00210<br>00220<br>00220<br>00200<br>00200<br>00010<br>00010<br>00010<br>00000<br>00000<br>00000<br>00000<br>00000<br>00000<br>0000 |
| •    | (8) 1010<br>                                  |       |               | 0£10                                    | in [w   |          |                     |                                              | 8001<br>                                             |       |          |             |                       | \$8166<br>64166<br>64166<br>99166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166<br>40166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | microstosia vari meca.   incostosia vari meca.   microstosia vari meca.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 000540<br>001417<br>015110<br>002710<br>002710<br>007111<br>007111<br>009111<br>009011<br>002011<br>002011<br>002011                                           |

33-503+ - UVU ⊀:3%324V

| 22-505H                     |              |                              |  |  |  |  |  |  |  |
|-----------------------------|--------------|------------------------------|--|--|--|--|--|--|--|
| ANN : GBTAG EGZM ZBGBZRBAUZ | 0099-177/912 | CECEBHONE NO:                |  |  |  |  |  |  |  |
| DETE: NOVEMBER 30, 1985     | 7738 1814    | 140 MO1703A10 A30MU 03AA93A9 |  |  |  |  |  |  |  |

The material itself presents to hoaith basard unless it is welded, burned, ground, or cut. During these procedures it is busisted it is advised that your procedures it is busisted to a competent health professional to determine whether or not a hazard exists, particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

MORNAMOTERE PRACTICES: As required for the work done with lead bearing materials. Meet requirements of the CSMA lead standard where necessary. Always evaluate the jobs done on this product in accordance with OSMA or relevant state, federal, or local standards.

CHER PROTECTIVE CLOTHING OR EQUIPMENT: As required for the work done or with the metal.

EYE PROTECTION: Exquired for mult, grind, cut, or weld onerations. Minimum requirement of safety glasses with such sprints for protection including face shields are smitted, for their operations prepared may require face shields.

PRUTECTURE GLOVES. Reculing not moth, princ, but or with operations. Scheet glove approved for the specific

istuably among to thee outdoors aregon at easter by (1983/90). TADINANCSH

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APPENDIX "A" - MSDS-22 (continued)

| Copper        |                          | Copper | Zinc    | Lead | Tin   | Phos-<br>phorus | Ar-<br>senic | Iron | Ant in | Alumi-<br>num<br>5 |
|---------------|--------------------------|--------|---------|------|-------|-----------------|--------------|------|--------|--------------------|
| UNS No        | h y meg                  |        |         |      |       |                 | · · · ·      |      |        |                    |
| 134205        | High Leaded Brass        | b= 30  | 34.00   | 2.00 | •     | •               | -            | -    | •      | •                  |
| 3+500         | High Leaged Brass        | 53.00  | 35.25   | 1.75 | •     | •               | •            | •    | -      | -                  |
| 35000         | Medium Leaded Brass      | 62.00  | 36.90   | 1 10 | •     | •               | -            | •    | -      | •                  |
| 35 300        | High Leaded Brass        | 61.50  | 36,70   | 1.80 | •     | -               | -            | -    | •      | -                  |
| 35600         | Extra High Leaded Brass  | 62.50  | 35.00   | 2.50 | •     | -               | -            | •    | -      | •                  |
| 36000         | Free Cutting Brass       | 61.50  | 35.25   | 3.25 | •     | -               | -            | •    | -      | -                  |
| 36500         | Leaded Huntz Metai       | 60.00  | 39 - 35 | 0.65 | •     | -               | -            | •    | -      | •                  |
| 37000         | Free Gutting Muntz Metal | 60.00  | 39.00   | 1,00 | -     | -               | •            | -    | -      | -                  |
| 37700         | Forging Brass            | 60.00  | 38.00   | 2.00 | • -   | -               | -            | •    |        |                    |
| 38500         | Architectural Bronze     | 57.00  | ₩0.00   | 3.00 | -     | -               | •            | -    | •      | -                  |
| 41100         | Searing Bronze           | 90.00  | 9.50    | -    | 0.50  | •               | •            | •    | •      | -                  |
| 42500         | Contact Bronze           | 86.50  | 9.30    | -    | 2.00  | 0.20            | -            | -    | -      | -                  |
| 43500         | Trumpet Metal            | 81.00  | 18.10   |      | 0.90  | . •             | -            | -    | •      | -                  |
| L4 300        | Arsenical Admiralty      | 71.00  | 27.96   | -    | 1.00  | •               | 0.04         | -    | •      | •                  |
| 44400         | Antimonial Admiratty     | 31.00  | 28.00   |      | 1.00  | -               | -            | -    | •      | -                  |
| 44500         | Phosphorized Admiralty   | 71.00  | 27.96   | •    | 1.00  | 0.04            | -            | -    |        | -                  |
| 46200         | Naval Brass              | 63.50  | 35.75   | -    | 0.75  | -               | -            |      | •      | -                  |
| 46400         | haval Brass              | 60.00  | 39.25   | -    | 0.75  | -               | -            |      |        | -                  |
| 46500         | Arsenical Naval Brass    | 60.00  | 39.70   |      | 0.60  | -               | 0.06         | •    |        | -                  |
| <b>4</b> 8200 | Leaded Mavel Brass       | 60.00  | 38.55   | 0.70 | 0.75  | -               | -            | •    | -      | -                  |
| 48500         | Leaded Naval Brass       | 60.00  | 37.50   | 1.75 | 0.75  | •               | •            | •    | •      | -                  |
| \$0500        | Phosphor Branze (E)      | 98.70  | •       | -    | 1.30  | 0.16            | •            | •    |        | -                  |
| \$1000        | Phosphor Bronze (A)      | 94.8c  | -       | -    | 5.00  | 0.20            | -            | -    | -      |                    |
| \$1800        | Phosphar Branze          | 95.60  | -       |      | 4.20  | 0.20            | •            |      | -      | -                  |
| 52100         | Playsphor Sycates (C)    | \$1.75 |         | -    | 8.00  | 0.25            | -            |      |        | •                  |
| 52400         | Phasphar Branze 🕅        | 85.75  | -       | -    | 10.00 | 0.25            |              | -    |        | •                  |
| 53400         | Phosphor Brease (&1)     | 93.90  | •       | 1.00 | 5.00  | 0.10            | -            | •    | -      | -                  |
| 54400         | Phosphor Bremze (B-2)    | 87.90  | 4.50    | 4.08 | 4.50  | 0.10            | -            | -    | •      | -                  |
| 61006         | Atuminum Bromes          | 92.00  | -       |      |       | -               |              | -    |        | 8.00               |
| 61400         | Aluminum Branze (B)      | 90.25  |         | -    | _     | -               |              | 2.75 | -      | 7.00               |

The above analyses have not been performed by or for The Metalsource Corporation. For each alloy the composition has been furnished to Metalsource by our suppliers. Percentages allow are intended for the parameter of MSMS only and do not represent data to be used for design and/or specification ourspokes. Better is any of the above information to be observed by modify our standard Trade Customs and Conditions of Sale as imprinted on the face and observe of our invoices.

CERRO COPPER PRODUCTS COMPANY MSOS NUMBER - COPG-00-0364 Company - Copg-00-0364 รมูลภูลดูชาณรฐ<u>านบนนน</u> (สิจ) (เลง



7500 Grand Division Avenue • Cleveland, Ohio 44125 • 216/441-6600

# MATERIAL CAPETY DATA SHEET

Chemical Transportation Emergency Telegrone No.: 800-463-7616

Energency Telephone No.: 215/921-5000

This MSDS applies to the following established steel grades, type, and/or trade named products:

HIGH NICKEL ALLOYS: SUPER STATRLESS ALCOYS: HIGH PERFORMANCE-HEAT RESISTANT ALLOYS: HIGH PERFORMANCE-CORROSION RESISTANT ALLOYS: MASTELLOY: FERRALIUM - AS LISTED IN TABLE "A" BELON.

| HATER AL               | 5.A.B. =      | ACGIM-TLV (Mg/M3)                                         | CSHA-PEL (Mg/M3)                                        |
|------------------------|---------------|-----------------------------------------------------------|---------------------------------------------------------|
| Nickel                 | 7440-02-0     | 1.0                                                       | 1,0                                                     |
| I ( mao) t             | ~440-48-4     | .1                                                        | .1                                                      |
| Chromium               | 7440+47+3     | .5                                                        | 1.0                                                     |
| Molvodenum             | 7439-98-7     | 10.0 (20.0 STEL) -                                        | 15.0                                                    |
| wolfram <sup>(3)</sup> | 7440-33-7     | 5.0 (10.0 STEL)                                           | None                                                    |
| Iran                   | 1309-37-1     | 5.0 (oxide fume)                                          | 10.0                                                    |
| Silicon                | 7440-21-3     | 10.0 total dust<br>5.0 respirable dust                    | None                                                    |
| Manganese              | 7439-96-5     | 5.0 Dust Ceiling<br>1.0 Fume -3.0 STEL)                   | 5.0 Ceiling                                             |
| Lanadium               | 7445-62-2     | .05 <b>as</b> V <sub>2</sub> 0 <sub>5</sub> (Dust & Fume) | .5 Dust Ceiling $(V_2O_5)$<br>.: fume Celing $(V_2O_5)$ |
| *itanium               | 7440-32-6     | hone                                                      | None                                                    |
| luminum                | 7429-90-5     | 10.0 Dust (20.0 STEL)<br>5.0 Fume                         | None                                                    |
| Copper                 | 7440-50-B     | 1.0 Dust (2.0 STEL)<br>.2 Fume                            | 1.0 Dust<br>.1 Fume                                     |
| Columbium              | 7440-03-1 (2) | None                                                      | None                                                    |
| Tantalum               | 7440+25-1 (2) | 5                                                         | 5                                                       |
| Boron                  | 7445-42-5     | None                                                      | lione                                                   |
| Carbon                 | 7440-44-0     | None                                                      | None                                                    |

- See listing for each grade in Appendix "A" below.
- (2) Columbium & Tantalum
- (3) Tungsten

### TABLE "A" SUPER ALLDYS

|                      |                        | ,                        |                        |                     | CHEMIC                 | AL COM               | POSITI              | ON PER              | CENT                |                     |                     |                      |                     |                         | ,                         |
|----------------------|------------------------|--------------------------|------------------------|---------------------|------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|-------------------------|---------------------------|
|                      | Hastelloy<br>Alloy 8-2 | Hastelloy<br>Alloy C-276 | Hastelloy<br>Alloy C-4 | Cahot<br>Alloy #675 | Hastelloy<br>Alloy G-3 | Hastelloy<br>Alloy X | Cabot<br>Alloy 1200 | Cabot<br>Alloy #201 | Cahot<br>Alloy :400 | Cabot<br>Alloy 1600 | Cahot<br>Alloy '800 | Cabri<br>Alloy #800H | Cabot<br>Alloy 1825 | ferralium<br>Alloy #255 | Hastelloy<br>Alloy #H-532 |
| cke1                 | 69                     | 57                       | 65                     | 62                  | 44                     | 47                   | 99.2                | 99                  | 66.5                | 72                  | 32.5                | 32.5                 | 42                  | 5.5                     | 26                        |
| obal t               | 1.04                   | 2.54                     | 2.50                   | 1.04                | 5.00                   | 1.5                  | -                   | -                   | 1.00                | 1.0%                | 2.0                 | 2.0                  | 2.0*                | -                       |                           |
| romium               | 1.0º                   | 15.5                     | 16                     | 21.5                | 22                     | 22                   | -                   | ١-                  | -                   | 15.5                | 21                  | 21                   | 21.5                | 26                      | 22                        |
| olybdenum            | 2 <b>8</b>             | 16                       | 15.5                   | 9.C                 | 7.5                    | 5.0                  | •                   | -                   | -                   | -                   | -                   |                      | 3.0                 | 3.1                     | 5.0                       |
| olfram               | -                      | 4.0                      | -                      | -                   | •                      | .6                   |                     | -                   | -                   | -                   | -                   | -                    | -                   |                         |                           |
| ron '                | 2.00                   | 5.5                      | 3.00                   | 5.0                 | 19.5                   | 18.5                 | .40                 | .40*                | 1.5                 | 8.0                 | 44                  | 44                   | 29                  | €2                      | BAL                       |
| ilicon               | .17                    | .680                     | .08:                   | .51                 | 1.00                   | 1.00                 | .15                 | .15                 | .50                 | .50*                | 1.53                | 1.00                 | .50                 | 1.0                     | 1.50                      |
| inganese             | 1.0*                   | 1.0                      | 1.0                    | .5.                 | 1.00                   | -                    | .35 €               | .35                 | 1.25                | 1.0                 | 1.5                 | 1,5                  | 1.0                 | 1.50                    | 2.50                      |
| roon                 | -                      | -                        | -                      | -                   | -                      | -                    | -                   | -                   | -                   | ١-                  | -                   | -                    | ¦-                  |                         | .05*                      |
| nadium               |                        | .35                      | -                      | -                   | -                      | -                    | -                   | ١.                  | <b>-</b> ·          | -                   | -                   | -                    | -                   | •                       |                           |
| itanium              | -                      | -                        | .70                    | .40                 | -                      | 15                   | 10a                 | .10∘                | j -                 | . 30 *              | . 38                | . 38                 | 1.0                 | -                       | 4xCan                     |
| lum i num            | -                      | -                        | -                      | .4:                 | -                      | 1.5₽                 | }                   | -                   | .50                 | . 35                | .38                 | .38                  | .200                | •                       |                           |
| opper                | - :                    | -                        | -                      | -                   | 2.0                    | .5                   | .25                 | .25                 | 31                  | .50:                | .75                 | .75                  | 2.2                 | 1.7                     | ĺ                         |
| ther                 | -                      | -                        |                        | 3.7                 | . 5                    | .008                 | İ                   | Ì                   |                     |                     |                     |                      |                     |                         |                           |
| pecified             |                        |                          | (1)<br>co+T <b>a</b>   | cs+:a               | ) <u>e</u> (2)         |                      |                     | İ                   |                     |                     |                     |                      |                     |                         | i                         |
| ensity (* cw.in)     | . 333                  | . 321                    | .312                   | . 305               | . 300                  | .297                 | . 321               | . 321               | .319                | . 304               | .287                | .287                 | .294                | . 282                   |                           |
| elting Point<br>(of) | ~2375                  |                          | ~2420                  | - 35.0              |                        | 2200                 | 2615                | 2615                | 2370                | 2470                |                     | -2475                |                     | ~2600                   | -                         |

<sup>+ =</sup> Nickel + Cobalt

Cabot and Hasteliov are registered trademarks of Cabot Corporation FERRALIUM is a registered trademark of Bonar Langley Alloys Ltd.

Not Applicable.

3. FIRE AND EXPLOSION HAZARD DATA

SPECIAL FIRE FIGHTING PROCEDURES: If this material is reduced to a powdered form, caution must be used to prevent fire or expression. To extinguish a metal powder fire, use dry sand, dry graphite, or other Class "D" fire extinguishing powder.

MAZARDDUS DECOMPOSITION PRODUCTS: Various elemental metals and oxides may be generated from melting or dross randling operations. Refer to Section 1, for permissible exposure limits.

Columbium & Tantilum (2) Boron

<sup>2.</sup> PHYSICAL DATA

### DISCLATIER

B. furnishing Material Safety Data Sheety The METALECUTE CERTEATION METER ST WARRENTIES, expression or implicit beyond those contained in our Standard Terms, Ducture and Committies of Date as published on the Face and Revenue of any invoices including, but not limited to, implied warranties of merchantacyllity and/or fitness for a particular purpose.

The information contained on this Material Safety Data Shoet MSDS. Is believed to be correct, but no impresentations, guarantees or warrant except as your and are made as to its accuracy, suitability for marticular analycation, magents or nepton outside of a solid and outside of a solid as your answers as the refer to the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside of the solid outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside outside

As able, the product of prices or this MODS is annumered by Motalsource to be an largicied within the meaning of this 35 of the loca of Podral Fedulations, Secribin 1919-1225 et sec. This MODS is intended to be used solely for the durings of patients of the local requests made pursuant to that requirement. Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility of the user, and the user has the responsibility of the open of the user as a section of the open of the user as the responsibility of the user.

### 4. SPECIAL PROTECTION INFORMATION

VENTILATION: local exhaust ventilation should be used to keep worker exposure below accented exhosure limits buring welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not (easible to control overexposure or while they are oxing instituted, appropriate MIOSH approved respirators shall be used, and selected according to 29 CFR 1910.13%.

EYE PROTECTION: Appropriate protective eve and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as weiding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards. OTHER: N/A

# 5. PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

inhalation of fumes from welding or burning; dusts from prinding or cutting.

N/A

Skin contact with this material may cause in some sensitive individuals an allergic response if such elements as chrome, copalt, copper, and nickel are present. In the form of metal dust or powder, skin contact or abrasion may also cause irritation or dermatitis.

#### COPPLYS OF OVEREIBOSING

RATES for our exercisions. ACUSE Reserve inhalation of Gues From many metals can produce with some manufacture stourner and metals in a such as a configuration of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the source of the sou

metal lims fever have not been noted.

CRMONIC: Excessive and repeated intalation of chromium fumes on dust may cause severe irritation, vicination or cancer in the respirators visitem a noise, throat and lungs. It is generally between that the newswight forms of encourage (EA-b) are responsible for these effects. It is uncertain whether metallic phromium in dust form can cause the same effects noted above. Until this issue in response controls or personnel protective equipment files, respirators) should be utilized to assure exposures are not uncessive. Similarly, excessive inhabition of nicel fumes have been associated with respiratory cancer. Both chronium and nickel are potential sensitizers, and may cause allergic reactions.

Gily after six to ten years of exposure to iron dust or fume does one present any sign; of pneumoconiosis Physical exeminations of those exposed to iron dust have not indicated any disability.

ACUMINUM - Excessive exposure to aluminum time and dust has been associated with jung distase, but this effect is probably due to simultaneous silica indosure.

CHARMINE - In some workers, chromium compounds act as alterdoms and has cause cernal-rit and has also produce pulmonary sensitization. Oncome actd and encounters have a direct corrective effect on the their and the mutous memoranes of the upper respirators tract. Although hars, there has be the possibility of skin and hulmonary sensitizations.

labC has determined that there is sufficient evidence of increased func cancer among workers in the chromateproducing industry and possible chromism allow workers. This determination is supported by sufficient evidence for carcinopenicist to annuals and possible mutapenicity testing of CF VI compounds.

CDBAT? - Cobair has been reported as causing nipersonsitization tips dermalities in individuals who are susceptible. Animal studies have shown that particulate cosalt is an acutely irritating substance and industrial emposures, possible commince were mail amounts of silica, are reported capable of producing serious pneumocomiosis which is initially of an insidious nature.

is initially of an invideous nature. 
COPPER in Hilling, griding, Cutting of copper has produce fames or dust exposure and preathing these fames or dust assume present potentially significant health hazards. Tumes of cooper has couse healal fame favor with flux likes symcomes and sain on hair discoloration, will be involved in directably as not been readed, arraftingation of the hands and the solit of the leet has been reported. Systematically as well, copper dust and fume cause intrinsic fine upon reasonable states in him mount, and hauses.

(RDB - The inhalation of iron back function but has cause an apparent benion pneumocontovis which is called spacerois. This disease is reported to be disabling, but makes alray diagnosis of other lung conditions difficult or inpossible.

MANGAMESE - Excussive and prolonged inhalation of mandanese (denorally over 2 years exposure) can cause damage the central nervous system. Specifical i, the patholog, resenctes Parkinson's Disease.

The central network instem. Specifical to the pathoton revenetes Parkinson's Disease.

MoLeRBEUM - Disnot forseen a prazinc in the resemble content. Though noticetum has caused toxicity lanema and poor growths or farr animals, there is not data documenting toxicity to means due to industrial exposure.

NICEE - The most common paimont arrising from contact with nicked or its composure; an allergic dermatities and as insceed its the which visually occurs when this sain is morely Generally nicked and most salts of nicked do not cause systematic politoning, but nicked has been identified as a suspected carcinogen.

SILITON - Accumulation in lungs hav be responsible for tenion pneumoconipsis, but not considered to be responsible for pulmonar, functional impairment or respirators, elementors

one two pulmoners sunctional infaltment or respirators, sendings.

TARTALMS - Metallic tentalum and its unides have a relutively low order of toxicits. Although some animal caperiments have suggested that inhalation of Tallor its object has produce beingn and nonfiltratic pulmonary effects, not absence effects have been reported as a result of industrial coposures. There have been some report of adverticible to reactions due to tantalum, however, most evidence indicate, that Talls relatively inert with respect to skin contact.

TETANTUM - its oxides and carbide are envisionageally inertiand present no adverse health effect.

VAMABIUM dusts cause a persistent cough which develops after 5 hours of exposure and have last up to 10 days.

Pulmonary irritation also results from variablem, but there are no deviations in sulmonary function or other laboratory rests.

Fillion (3.5) Time is very low in toxicits but inhalation of funes has cause 'metal fune fever'. Onset of symptoms has be delayed 4-12 hours and include irritation of the nuse, noutr and throat, couph, stomach pain, hasoache, nousee, voniting, metallic taste, chills, fever, pains in the nuscles and joints, thirst, prachilis or parameters and a blush tint to the skin. These symptoms go awas in 24-48 hours are leave no effect.

NOTE: Antimony trioxide, beryllium, casmium, chromium, copalt-chromium alloy, lead and nickel have been identified as potential human carcinopens.

### 6. EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

### 7. ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4-6-5 for further information.

RESPIRATORY PROTECTION: If exposure above the PEL or TLY, NIOSH approved respirators for fume or dust, dependent upon the source of airborne contaminant.

VENTILATION: Required if dust or fume created in handling or working on this material.

LOCAL EXHAUST: Required if dust or fume created in handling or working on this material.

MECHANICAL (GENERAL): As above to reduce airborne dust or fume levels.

PROTECTIVE GLOVES: Required for melt, grind, cut or weld operations. Select glove approved for specific operation.

EYE PROTECTION: Required for melt, grind, cut or weld operations. Minimum requirement of safety glasses with side shields for these operations. Melting and welding may require special eye protection including face shields and specialty tinted glass. Grinding operations may also require face shields.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: As required for the work done or with the metal.

WORK/MYGIENE PRACTICES: As required for the work done with lead bearing materials. Heet requirements of the OSMA lead standard where necessary. Always evaluate the jobs done on this product in accordance with OSMA or relevant state, federal, or local standards.

The material itself presents no health hazard unless it is welded, burned, ground, or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: K.R. BELL DATE: November 30, 1965

TELEPHONE NO. 216/441-6600 SUPERSEDES MSDS DATED: N/A



# MATERIAL SAFETY DATA

Chemtrec Chemical Transportation Emergency

Telephone No.: 800-424-9300; District of Columbia: 202-483-7616

Emergency

Telephone No. 216/622-5000

This MSDS applies to the following established steel grades, types, and/or trade named products:

CARBON ALUMINUM COATED STEEL PRODUCTS: COILS, SHEETS, STRIP 5 PLATE (GALVALLUME)

# HAZARDOUS INGREDIENTS

|                      |            |           | PERMISSIBLE                | AIR LEVEL                  |
|----------------------|------------|-----------|----------------------------|----------------------------|
| MATERIAL             | CAS #      | % (RANGE) | ACGIH-TLV (Mg/M3)          | CSHA-PEL (Mg/M3)           |
| Iron                 | 7439-89-6  | Balance   | 5 (oxide fume)             | 10 (oxide fume)            |
| Carbon               | 7440-44-0  | .01-1.2   | Not Listed                 | Not Listed                 |
| Manganese            | 7439-96-5  | .25-2.0   | 5 (dust)                   | 5 (ceiling limit)          |
| Chromium             | 7740-47-3  | .01-2.0   | .05 (Cr VI-Compounds)      | 0.1 (Cr - Metal)           |
| Nickel               | 7740-02-0  | .01-1.0   | 1                          | 1                          |
| Copper               | 7740-58-0  | .01-1.0   | 0.2 (fume)                 | 0.2 (fume)                 |
| Trace<br>Elements    | N/A        | ⟨2.0      | N/A                        | N/A                        |
| Metallic<br>Coating: |            |           |                            |                            |
| Aluminum             | 7429-90-05 | 50-60     | 5 (fume)                   | N/A                        |
| Zinc                 | 7440-66-6  | 40 (min)  | 5 (oxide fume)             | 5 (oxide fume)             |
| Silicon              | 7740-21-3  | 1.5-2.0   | 10 (total dust)            | 15 (total dust)            |
| Trace Elements       | N/A        | <1.0      | 5 (respirable dust)<br>N/A | 5 (respirable dust)<br>N/A |

(OPTIONAL): Light surface coating of petroleum oil, greased edges, chromatic treatment of phosphate, borax and stearate soaps. The possible presence of these coatings should be considered when evaluating employee health hazards and exposures during welding or other dust/fume generating activities.

Use of gloves is recommended to prevent skin irritation.

NOTE:

See additional comments on the back under item #7.

# DISCLAIMER

By furnishing Material Safety Data Sheets THE METALSOURCE CORPORATION MAKES NO WARRANTIES, expressed or implied, beyond those contained in our Standard Terms, Customs, and Conditions of Sale as published on the Face and Reverse of all invoices including, but not limited to, implied warranties of merchantability and/or fitness for a particular

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for a particular application, hazard connected with the use of material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Metalsource to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. Compliance with all applicab federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are or may be required.

# 3. FIRE AND EXPLOSION HAZARD DATA

Not Applicable.

# 4. SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

RESPIRATORY PROTECTION: When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NIOSH approved respirators shall be used, and selected according to 29 CFR 1910.34.

EYE PROTECTION: Appropriate protective eye and face equipment shall be worn when there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

PROTECTIVE GLOVES: Appropriate and as needed to protect against exposure to chemical or physical hazards.

OTHER: N/A

### PHYSIOLOGICAL EFFECTS

PRIMARY ROUTE OF EXPOSURE

THRESHOLD LIMIT VALUE (TLV)

N/A

Inhalation of fumes from welding or burning; dusts from grinding or cutting.

### EFFECTS OF OVEREXPOSURE

Acute: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fume fever". Though metals such as copper and zinc have been most associated with metal fume fever, it is suspected by some authorities (Casarett and Doull's Toxicology: The Basic Science of Poisons; Hamilton and Hardy: Industrial Toxicology) that other metallic fumes may produce this condition. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), which come on a few hours after large exposure. Long-term effects of metal fume fever have not been noted.

Chronic: Only after six to ten years of exposure to iron dust or fume does one present any signs of pneumoconiosis. Physical examinations of those exposed to iron dust have not indicated any disability.

Excessive and prolonged inhalation of manganese (generally over 2 years exposure) can cause damage to the central nervous system. Specifically, the pathology resembles that of Parkinson's Disease. Other chronic effects may include bronchitis and pneumonitis.

# EMERGENCY AND FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately to fresh air and seek medical attention.

# ADDITIONAL COMMENTS

NOTE: The percent composition reflects the range that is possible within this GROUP of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing manganese (for example), the potential for exposure to manganese obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See Section 4 & 5 for further information.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

PREPARED UNDER DIRECTION OF: W.R. BELL DATE: NOVEMBER 12, 1985

TELEPHONE NO: 216/441-6600 SUPERSEDES MSDS DATED: N/A

72-62-7820-01

#### Ashland Chemical Company DIVIBION OF ABHLAND DIL. INC.

MATERIAL SAFETY
DATA SHEET

P 0 BOX 2219 COLUMBUS, 0HO 43215 + IB14) 889-3333



24-HOUR EMERGENCY TELEPHONE (606) 324-1133

| 0023           | 7.3                                     |                |               |                          |                        |             |                   |                          |           |                  |                  |                 | T                                                  | R I              | C+                                           | 1L (            | D FR | •                       | T H            | ^ ^                                          | •      | 1 1                  | 1              | 0                                           | E            | <b>3 P</b> 1 | •                   | cc             | )L (       | 0/                        | •                                       |                 |                   |                |                      |                |                |            |                     |            | r        | A G  | € : | 2    |
|----------------|-----------------------------------------|----------------|---------------|--------------------------|------------------------|-------------|-------------------|--------------------------|-----------|------------------|------------------|-----------------|----------------------------------------------------|------------------|----------------------------------------------|-----------------|------|-------------------------|----------------|----------------------------------------------|--------|----------------------|----------------|---------------------------------------------|--------------|--------------|---------------------|----------------|------------|---------------------------|-----------------------------------------|-----------------|-------------------|----------------|----------------------|----------------|----------------|------------|---------------------|------------|----------|------|-----|------|
|                |                                         | • -            |               |                          |                        |             |                   | -                        |           | - :              | e c              |                 | 5                                                  | ₽-               | V -                                          | н               | ËĀ   | Ě                       | 1 H            | - ;                                          | 14     | <br>Z A              |                | D                                           | ô            | ÀŤ.          |                     | ; ;            | 0          | NT:                       | ĪN                                      | ve              | D                 | •              |                      |                |                |            |                     |            |          |      |     |      |
| <br>BWAL       |                                         |                |               |                          |                        | • -         |                   |                          |           |                  | •                |                 | • •                                                |                  |                                              |                 |      | -                       | •              |                                              | •      |                      | -              |                                             |              | • -          |                     |                |            |                           |                                         |                 |                   |                | 7 7                  | NG             |                |            | no                  |            | ••       | - •  |     |      |
|                | DI                                      | ^ =            | <b>R</b> H    | Ē,                       |                        | ~ ~         |                   |                          |           | 1.               | .,               |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         | •               |                   |                |                      |                | •              |            |                     |            |          |      |     |      |
| F 1 R 6        |                                         | 10             | -             |                          |                        |             |                   |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| 17 0           | N . 8                                   | N 1            | N<br>A M      | 1<br>1                   | H                      | D R         | 0 U               | CI                       | 41<br>. O | Y<br>T H         | W 4              | 4 S I           | • '                                                | ťχ               | AL                                           | ) NI            | DE   | m.                      | C              | 0,                                           | Ť      | ~ -                  | •1             | N A                                         | 11           | ÊÔ           | <b>-</b> c          | Ĺ              | 771        | HÏ                        | NG                                      | 8               | Ė                 | 0              | E                    | FE             | -              | <b>/8</b>  | €.                  |            |          |      |     |      |
| 1 F 1          | Not                                     | CA.            | 6<br>6 I      | 0                        | LL                     | 'n          | H<br>Y .          | ٧;                       | 1 T       | H                | LA               | D               | G E                                                | ۸î               | 7                                            | 1               | Ĭ    | N                       | , ;            | 0                                            | ٠.     | ^ '                  |                | ٠,                                          | ٠            | LI           | rt                  | 1,             | 46         | U                         |                                         | E P             | •                 | . 70 (         | , ,                  | . 0 4          |                | •          | LI                  | 09         |          |      |     |      |
| 1F 8           |                                         | L O            | we<br>Ge      | n<br>Nr                  | . , 1                  | 20          | , N               | 0                        | ,<br>T    | 10               | יטו              | /CI             | E                                                  | v 0              | H 3                                          | 7 :             | I N  | G                       |                | c,                                           | N L    | L                    | P              | нч                                          | 15           | t C          | Y A                 | N              | 0          | R                         | 1 17                                    | A N             | 81                | * O F          | 7                    | 7 0            | ,              | A N        |                     |            |          |      |     |      |
| XF M           |                                         | 7 141          |               | ÜĻ                       |                        |             | A F               | 7 (                      |           | 7 E              | 0                | F .             | 5                                                  | M ()<br>X Y<br>N | V ()                                         | 2               | IN   | D                       | 1 V            | 10                                           | 9 U    | 4 L                  | H              | 1 0<br>1 N                                  | 16<br>61     | F#F          | F 8                 | . E            | A :        | IR<br>OP<br>CA            | r E                                     | 1 r<br>D<br>A 1 | 61                | V (            | 1                    | HI             | N              | ;<br>, x   | C I                 | A L        |          |      |     |      |
|                | DO<br>HE                                | †1<br> -       | o î           | w 1                      | 1,                     | F           | , e               | 7                        | H         | UL.              | ĒF               | 9 T 6           | 5 7                                                | ₿.               | EF                                           | . 1 :           | NE   | -                       | HR             | 1,                                           | NE     | •                    | ) <del>R</del> | ε                                           | •            | 45           | DR                  | IP             | 4.         | H                         | <b>A</b> V                              | ^               | D                 | / E #          | · 5 E                | LY             | •              | 4 5        | FE                  | CT         | 1        | HE   |     |      |
| P # I M        | ARY                                     | R              | ) i i         | : :                      | : :                    | •           |                   | Ē.                       |           | N 1              | RY               |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
|                | INI                                     | 141            |               | 7 3                      | 0 1                    | •           |                   |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
|                | BK:                                     | N              | C             | 0 N                      | 1 4                    | ¢           | 1                 |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              | _      |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
|                |                                         |                |               |                          |                        |             | • ·               |                          | -         |                  |                  |                 |                                                    |                  | E C                                          | 11              | 0    | N                       | ٧              | 1                                            |        | FA                   | c              | 1 7                                         | ۷ ;          | į į          | ¥ .                 | DA             | 1          |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| HAZA           | <b>₹</b> noi                            | /5             | r             | οι                       | ٧.                     | 16.         | R 1               | z s                      | . 1       | 10               | N                | •               | ۱۸:                                                | NN               | 01                                           | •               | oc   | C١                      | ) <del>R</del> |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| 6 1 A #        | 1 t. 1                                  | •              |               | 5 1                      | A F                    | t L         | ε                 |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              | ٠      |                      |                | _                                           |              |              |                     |                |            |                           | <b>.</b>                                | _               |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| INCO           | ANG<br>ANG<br>CAS                       | 111            | 76            | 1 1<br>5 1<br>5          | F F<br>L T<br>OF       |             | UM<br>IN<br>PH    | 01                       | (1)       | 0<br>P 1<br>E 14 | C C<br>MA        | F L             | 00                                                 | HE.<br>C         | ńm<br>HL                                     | 0.5             | ) E  | D I                     | 7              |                                              | 8      | RC<br>RC             | É              | ř A                                         | 81           | N<br>X       | 1 5                 | 1 A            | NO<br>DI   | 70<br>70<br>70            | 641<br>641                              | E A<br>N<br>G E | 1 E<br>C I<br>N 1 | 9              | W 1                  | E T            | `c ,           | Ń          | ם<br>פ              | HI         | CH<br>AL | L.   |     |      |
|                |                                         |                |               |                          |                        | -           |                   |                          |           |                  | ٠.               |                 |                                                    |                  | <br>N                                        | <br>v 1         | - 1  | F                       |                | 1 i                                          | î      |                      |                | ٠.                                          | Ē.           |              | . <u>.</u>          | <br># C        | è i        | D                         | JR                                      | <br>E S         |                   |                |                      |                |                |            |                     |            |          |      |     |      |
|                |                                         |                |               |                          |                        | -           |                   |                          |           |                  |                  |                 | -                                                  |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| 61 <i>f</i> P1 |                                         |                |               |                          |                        |             |                   |                          |           |                  |                  |                 | -                                                  |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| RMALI          | A (1)                                   | CIF            | 2 <b>68</b> 1 |                          |                        |             |                   |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      | 0              |                |            |                     |            |          |      |     |      |
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| WA #1 1        | E (1) 1                                 | **             | ·O            | 5 4                      |                        | m           | r 1               | H C                      | ro        |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
| RMALI          | , e.r                                   | 71             | L<br>(A)      | <br>                     | AL<br>RD               | L           | D W               | <br>                     | 01        | . A              | 1 T              | i E             | .;                                                 | 10               | PT<br>CL                                     | I C             | 285  | , ;                     | 0              | E A                                          | V .    | A P                  | c              |                                             | 7 F          | I PI         | I N                 | 10             | O C        | ) (7<br>5 P (             | o s á                                   | A L             | e t               | ·              | EH                   | 41             | N              | N          | G                   |            | 7 I 1    |      |     |      |
| LANGE          |                                         | 11             |               | 1 14                     | DE<br>A I              |             | t Re              | <br>P.A.                 | 145 (     | <br>949<br>F     | E D              | ) 0<br>N 1      | 10 1<br>10 1                                       | 10               | , I                                          | NC<br>Br        | 1    | NE<br>DF                | P              | A T                                          | I      | D N                  | p.             | 1                                           | 7 I-         | ' <u>.</u> ' | ï                   | ,<br>4 N       | 6 A        | T L                       | . [                                     | 1               | t + FI<br>Pv      | AC             | c o                  | RD             | <b>A</b> P     | 1C I       | E I                 | ~ 1        | 1 11     |      |     |      |
|                |                                         |                |               |                          |                        |             |                   |                          |           |                  |                  |                 |                                                    |                  |                                              |                 |      |                         |                |                                              |        |                      |                |                                             |              |              |                     |                |            |                           |                                         |                 |                   |                |                      |                |                |            |                     |            |          |      |     |      |
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| 9E 6P1         | NIC<br>NIC<br>NIC<br>EOI                | 05<br>55<br>55 | 121           |                          | # D<br>H A<br>R        | τ (<br>ε    | 7 C<br>1 D<br>4 V | 1 I V                    | 01        | y<br>y<br>y      | I<br>A<br>[10    | F<br>F F<br>1 A | ֓֞֝֝֞֝֝֞֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֓֡֓֡֓֓֡֓֡֓֡֓֡ | V                | 0<br>0<br>0<br>0<br>0<br>0<br>0              | F _             | I    | HE<br>L<br>L            | 5<br>C         | PR<br>UP<br>DS                               | P 1    | בי<br>בי             | C 1            | ,<br>()                                     | PE<br>UL     | 57           | I I                 | FA<br>ON<br>UN | 5 C        | AL                        | 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | NE              | NT<br>AD<br>PE    | VI<br>RH<br>OU | 8<br>5 E<br>I T<br>8 | EX<br>D<br>O   | CE<br>IN<br>IP | C          | 761<br>7            | D ,<br>5 E | NĈI      | E    |     |      |
|                | IMP                                     | LE             | H             | N                        | !<br>! E               | 5           | jė.<br>T          |                          | P         | R                | )<br>UC          | ΕÉ              | ,<br>,                                             | (P)              | 35                                           | UR              | E    | N G                     | •              | 0 🗬                                          | •      | ٩D                   | M ]            | . N.                                        | 1 6          | 3 5          | •                   | 7 I            | ٧F         | •                         | .0,                                     | 11              | # C               | LB             |                      | но             | VL             | 0          | •                   | E          |          |      |     |      |
| /FN13          | VEN                                     | 10             | N.            |                          | F <b>Q</b>             | O V         | ۲ <u>۲</u>        | DF<br>0                  | H         |                  | 7 F<br>N 1       | I C             | T.F                                                | E                |                                              | 9               | C    | RE                      | N              | Ē                                            | Ĉ      |                      | ''             | S E.                                        | ۷ E          | F 4          | L<br>)              | ^              | NC         | ,,,                       | •                                       | L.              | oc                | AL             | E                    | ×H             | <b>A</b> (     | 15         | ,                   |            |          |      |     |      |
| POI            | EC11                                    | ٩٢             | , ,           | ı.                       | D V                    | FE          |                   | _                        | * 4       | <b>P</b>         | F                | EŖ              | T 5                                                | . 7 /            | N                                            | T               | 61   | . 0                     | ٧.             | 2.3                                          | •      | 3 U                  | C+             | •                                           | A 6          | ٠.           | . !                 | <b>"</b> 0     | LY         | V 3                       | N                                       | <b>,</b> r      | ^                 | r c            | ОН                   | ΟĽ             | •              |            |                     |            |          |      |     |      |
| ***            | PROT<br>AUV                             | E C            | 11            |                          | N                      |             | -<br>- H:<br>-/ - | / M                      | 70        | A                | L<br>() *.       |                 |                                                    | ## P             | 4<br>. 1 1                                   | 6 C             | G    | 6 L                     | F :            | ,<br>,<br>,                                  | 3 F    | y<br>. 6             | C f            | ) Mi                                        | r 1          | 14           | N                   | Ċ E            | .;         | :::                       | **,                                     | 0<br>V          | 6 H               | *              | R C                  | 6 V<br>F 1     | L A            | G L        | . 41                | N S        | E B      | 7 E. |     |      |
| ) T 14[* 6     |                                         | 01             | r (           | 1                        | 1 ¥                    | •           | r                 | 0 (1                     | 7 7       | N                | E AI             | i .             | _<br>1,                                            | 8                | ,<br>0                                       | R C             | ٧(   | FN                      | 7              | -                                            | E I    | •                    | <b>A</b> 1     | T (C.)                                      | n            | O.F          | •                   |                | οι         | 0                         | 4 E. F                                  | 0               | **                | K I            | N                    | CO             | N T            | <b>A</b> ( | : 1                 | •          | ME 4     | ~    |     |      |
|                |                                         |                |               |                          |                        |             |                   |                          | ĉi        | 11               | DN               | - <u>;</u>      | ×                                                  | 51               | ÷                                            | ć i             | Ā    | -                       | Ē              | •                                            | ċ      | ũ                    | i i            | 0                                           | <br>v g      |              | À                   | <br>0          | 71         | iE F                      |                                         | 0               |                   | EN             |                      | <br>           | <br>           |            |                     | <br>       | • • •    |      |     | <br> |
| ONTA           | CO!                                     | 7 A<br>7 A     | I N           | F                        | 7<br>7 S<br>7 E        | ## ]<br>C A | 1 B               | #<br>7 #<br>7 I          | A T<br>DA | E (              | RI<br>PR         | AL<br>OD        | ų,                                                 | 1                | R                                            | 8 E<br>6<br>7   | ĭ    | HA<br>DU                | E S            | . T                                          | D (    | A<br>B               | 5<br>P C       | R                                           | HE<br>Í      | N<br>L I     | E                   | MP<br>UI       | 7 J<br>0 , | E                         | . e                                     | 3 / (<br>3 / (  | NC<br>DR          | E<br>E D       | Or<br>E W            | 10             | ; E            | ۰,         |                     |            |          |      |     |      |
| V011           | CON                                     | N 1            | Ā             |                          |                        | ı ,         | **                | -                        |           | . **             | • •              | c               | ۸                                                  | יח               |                                              |                 | -    | E #                     | 1              | ١.                                           | Œ      |                      | e a            | 10                                          | I P          | ME           | . N                 | ٠,             | ٠          | RC                        | 7 6                                     | C.              | 7 3               | ٧F             | c                    | r o            | TH             | IA         | 16                  | . '        | ) NC     | •    |     |      |

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| THIS MEDE COMPLIES                                               |                                                                                                             |                                    |                         | MMUNICATION                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                  |                                                                                                             |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PRODUCT NAME - TRICHLO                                           | RETHAN 111 DEGRE CO                                                                                         | FD/4                               |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| CAS NUMBER:                                                      | 71 45 4                                                                                                     |                                    | 96 60 071<br>PATA SHEET | 3#27180-                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| METAL SOURCE -<br>GREAT WESTERN S<br>2300 M & S TH.              | TEEL CO.                                                                                                    |                                    | ATEST REV               | NO REPLACE.                               | 907 - 614 - 615 - 614 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - 615 - |
| 2300 W SS TH.<br>CHICAGO                                         | ET.<br>IL 6D636                                                                                             | ,                                  | PRODUCT<br>INVOICE:     | .1968500<br>6.12857                       | 1 / HA - #A326                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                  | •                                                                                                           | 1                                  | INVOICE DA<br>Fo: Bame  | 16: 10/11/0                               | 1 &                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ATTN: PLANT MER                                                  | . PRAFETY DIR.                                                                                              |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                  | SECTION L. PRODU                                                                                            | CT TOPAT                           |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                  | BECTION I-PRODU                                                                                             |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| GENERAL DR GENERIC ID-                                           | CHIORINATED HYDROC                                                                                          | ARBON                              |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| HAZARD CLASSIFICATION:                                           | (14) ORM-A                                                                                                  |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                  | BECTION 13-HAZA                                                                                             | POOUS CO                           | HPONENTS                |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| INGRFOIENT                                                       | 2 (RY WT)                                                                                                   | PEL                                | TLV                     |                                           | NOT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                  |                                                                                                             |                                    |                         |                                           | ***                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1,1,1=<br>Trichlorgethane                                        | 90-95                                                                                                       | 380                                | 360                     | PPM                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ( 1): CONTAINS A PROPE<br>DIETHYLENE EIHER                       | TETARY INHIBITOR PA                                                                                         | SKASE WHI                          | TON INCLUS              | DOLLHALE                                  | NE FIHER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DIETHTING ETHER                                                  | MAB & FEL OF 100 FF                                                                                         | H-BRIN AF                          | *** - 1EV ()            | . 25 FF-5K                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                  | -111 NOTIONA                                                                                                |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PROPERTY                                                         | RFF                                                                                                         | INFMENT                            |                         |                                           | IEASUREMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ***                                                              | • •                                                                                                         |                                    |                         | -                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| INITIAL BOILING POINT                                            | FOR PRODUCT                                                                                                 |                                    | •                       | 72 00 -                                   | 96 +6 DE6 F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                  |                                                                                                             |                                    |                         |                                           | 80 00 MMHG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| VAPOR PRESSURE                                                   | FOR PRODUCT                                                                                                 |                                    |                         |                                           | 00 00 MMHG<br>68 10 DFG F<br>20 00 DFG C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                  | 112117171717                                                                                                |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| VAPOR DENSITY  BEECIFIC GRAVITY                                  | AIR : 1                                                                                                     |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PLECIAL GRAVITA                                                  |                                                                                                             |                                    |                         | 1 57D -                                   | 1 324<br>27 56 Prt F<br>25 80 Prt C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PERCENT VOLATILES                                                |                                                                                                             |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| EVAPORATION RATE                                                 | CETHYL ETHER                                                                                                |                                    |                         |                                           | 2 60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| APPEARANCE                                                       |                                                                                                             |                                    |                         | CLEAR, APHA                               | COLOR 15 MA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BIATE                                                            |                                                                                                             |                                    |                         |                                           | L1001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FORM                                                             |                                                                                                             |                                    |                         |                                           | номов вог                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                                                                  | RECISON TV-FIRE                                                                                             | AND EXPLE                          | ATAD NOTEC              |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| FLABH POINT NOT APPLE                                            | **************************************                                                                      |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                  | 00001)                                                                                                      |                                    | ≠FR - 6                 | ,,                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| EXTINGUISHING MEDIA: W                                           |                                                                                                             |                                    |                         | •                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| HAZARDOUS DECOMPOSITIO                                           | N PRODUCTS MAY FOR                                                                                          | m roxic #                          | TATERIAL B              | . CARBON DI                               | OXIDE AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CARBON MONDXIDE.                                                 | HYDROĞEN CHLDRIDE,                                                                                          | PHOSGENE,                          | . VARIOUS               | IT DE IGARRON                             | is, ric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SPECIAL FIRFFIGHTING P                                           | MOCEDURES: WATER MA<br>NTIL FIRE 18 OUT                                                                     | Y ME UNEC                          | 10 MEEP                 | CIMF EXPOSE                               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| WEAR BELF CONTAIN                                                | ED BREATHING APPARA                                                                                         | IUS WITH                           | A FULL FA               | CIPACCE DPE                               | PATED IN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| PRESSURE-DEMAND O<br>UNUSUAL FIRE & EXPLOSI<br>Drum (Eyen Empty) | N'IL FIRE IN DOT<br>FD BREATHING APPARA<br>R OTHER POSITIVE PR<br>DN HAZARDS: NEVER U<br>BECAUSE PRODUCT (E | FSSURE MC<br>BE WELDIN<br>VEN JUBI | PESIDUE)                | FIMILING FIR<br>INC TORCH D<br>CAN IGNITE | N OP NEAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| EXPLOSIVELY.                                                     |                                                                                                             |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| NEPA CODER: HEALT                                                | H- R FLAMMADIT                                                                                              | T V 1                              | BEAC   1 V I            | 1 + 0                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| **********                                                       | BECTION Y-HEA                                                                                               | LIH HAZAR                          | A LAG G                 |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                  |                                                                                                             | <br>PPH                            |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PERMISSIBLE EXPOSURE L. THRESHOLD LIMIT VALUE                    | JEO JEO                                                                                                     | PPH                                |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| EFFECTS OF OVEREXPOSUR                                           |                                                                                                             |                                    |                         |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| EYER - CAN CAURE BEVER<br>BKIN - PROLONGED OR RE                 | E TRRITATION, MEDNE<br>PEATED CONTACT CAN                                                                   | BR, TEARI                          | NG, BI UPR              | FO YTSION                                 | FATTING,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DERMATITIS<br>BREATHING - EXCERBIVE                              | INHALATION OF VAPOR                                                                                         | R CAN CAU                          | RE NARAL                | AND RESIDEA                               | TO#Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| THEATHING - EXCERSIVE THAT ION, DIZZI                            | NERB, WEAKNERS, FAT                                                                                         | INUE, NAU                          | SEA, HEAD               | ACHE, POSSI                               | #L1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

72-62-7820-01

#### Ashland Chemical Company DIVISION OF ASHLAND DIL, INC.

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

**MATERIAL SAFETY** DATA SHEET

P D BOX 2219 COLUMBUS DHID 43216 - (614) 889-3333



002313

TRICHLOWETHAN 111 DEGRE COLD/Y

PAGE . 3

- BECTION IX-BRECIAL PRECAUTIONS OR OTHER COMMENTS (CONTINUED) OVEREXPOSURE TO MATERIAL MAR APPARENTLY SEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:, LIVER ASNORMALITIES, KIDNEY DAMAGE, LUNG DAMAGE
- OVEREXPORURE TO MATERIAL HAR BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS in Humans:, Cardiac Abnormality, Liver Abnormalities, Kidney Damage, Lung Damage
- THE INFORMATION ACCUMULATED MEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANIED TO BE MIRITHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

72-42-7820-01

#### Ashland Chemical Company DIVIDION OF ABHLAND OIL, INC.

**MATERIAL SAFETY** DATA SHEET

P II BOX 2218 COLUMBUS DWD 43216 - M14/ 889-3223 24-HOUR EMERGENCY TELEPHONE (606) 324-1133



#### DEFINITIONS

THIS DEPINITION PAGE IS INTENDED FOR USE WITH MATERIAL SAFFTY HATA SHEETS SUPPLIED BY THE ABBILAND CHEMICAL COMPANY GUESTIONS CONCERNING THISF SHEETS SHOULD BE DIRECTED TO THE ENVIRONMENTAL AND OCCUPATIONAL SAFETY DEPARTMENT.

PRODUCT INTENTION

FRODUCI CLASS: GENERAL OR GENERIC

HAZABDOUS CLASSIFICATION: PRODUCT MEETS DOT CRITERIA FOR HAZARDS LISTED.

# HAZARDOUS COMPONENTE

A MATARDOUS INDREDIENT IN ONE WHICH MEETS ONE OR MORE OF THE FOLLOWING CRITERIA:

1. IT IS LISTED IN THE ANNUAL REGIRING OF TOXIC EFFECTS OF CHEMICAL SUB-RIANCES, OR IT IS KNOWN TO ME TOXIC MITHIN THE PARAMETERS OF THAT REGISTRY.

#### AND/OR

2. IT HAG A OBHA ESTABLISHED, R-HOUR TIME-WEIGHTED AVERAGE PEWHISSABLE EXPOSURE LIMIT (PFL) OR ACCEPIABLE OFILING (C), OR AN AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS' (ACCIT) THEREHOLD LIMIT VALUE, AND BY NATURE OF THE PRODUCT OF TIS FROM USE, IT IS LIKELY TO BECOME ATRBORNE.

- 3. IT CONTRIBUTES TO ONE OR MORE OF THE FOLLOWING MAZARDS OF THE PRODUCT:
  - A. FLARHPOINT BELLOW ZDD DEG F (CC), OF EUBJECT TO SPONTANEOUS HEATING OR DECOMPOSITION.
  - CAUSES SKIN JURNS (DOT)
  - STRONG OXIDIZING AGENT. (DOT)
  - BUBLICT TO HAZARDOUS POLYMERIZA-D.

EACH INGREDIENT MEFTING ONE OR MORE OF THE ABOVE CPITERIA IS LIN-ED IN SECTION IN A LOVEL AT LEAST OFFICE ARE LART OF THE ABOVE CPITERIA IS LIN-ED IN SECTION IN A LOVEL AT LEAST OFFI ARE LART OF THE ARE LART OF THE ARE LART OF THE ARE LART OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE AREA OF THE

EACH HAPARDOUR INGREDIENT IS LISTED BY CHEMICAL, GENERIC, ON PROPRIETARY NAME ITS LEVEL IN THE PRODUCT IS EXPRESSED 17 OF LESS, 1-107, 10-307, 30-807, OR GREATER THAN 607, OR NO DIMER MEANS

### PHYSICAL DATA

INITIAL BOILING POINT - IF LIGUID AT

YATUR PRESSURE: IF LIQUID AT 68 DEG FOR WHICH BUBLIMES.

YAPOR DENSITY: FOR VOLATILE PORTION OF

SPECIFIC GRAVILY: IF SPECIFIC GRAVITY OF PRODUCT IS NOT KNOWN, INDICATED AS (8, 88, 0R >1.

PERCENT VOLCTLES: PERCENTAGE OF MATERIAL MITH INITIAL BOILING POINT RELOW 425 DEG F.

EYAPORATION RAIE: INDICATED AS FASTER OR SLOWER THAN ETHYL STHER, UNLESS STATED.

### FIRE\_AND\_EXPLOSION\_HAZARDS

FLASH POINT: CLOSED CUP.

LOWER EXPLOSION LIMIL INDICATED FOR

HAZARDOUS DECOMPOSITION PRODUCTS: KNOWN HAZARDOUS PRODUCTE PEBULITHS FROM HEATING, BURNING, ETC., ON REACTED WAS MATERIALE MINICH MAY ARIBE THROUGH HEATING, BURNING, FTC.

BRECIAL FIREFIGHTING PROCEDURES: INDICATES FOULTHER TO PROTECT FIREHEN FROM TO YES PROPORTS OF COMBUSTION OR IF WATER IS NOT TO BE USED.

UNUBUAL EIRE AND EXPLOSION HAZARDS HAZARDS NOT COSERED BY OTHER BEC-TIONS OF THIS REPORT ARE SHOWN HERE

# HEALTH PAZAFD DALA

RECIPIENTS OF HIST DAIA SHEEL SHOULD CONSULT INF OBHA SAFETY AND HEALTH STANDARDS (29 CFR 19-10), PARTICULARLY BUBPART 5 - OCCUPATIONAL HEALTH AND ENVIRONMENTAL COURSEL, AND SUBPART 2 - PERSONAL PROTECTIVE FOUIPPENT, FOR GENERAL GUIDANCE ON CONTROL OF POTENTIAL OCCUPATIONAL HEALTH HAZARDS.

PERHIBSIBLE EXPOSURE LEYEL: ORMA ERTAB-LIENTO PILITIF NONE AVAILABLE, ADDPTED VALUE

REFECTS OF DYEREXPOSURE GIVEN IN GEN-ERAL TERMS, LULAL AND PYSIEMIC EFFECTS TO THE EVES, RNIN, IT MAT-ERIAL IS INMEDIA, UNLESS NOT APPLICABLE DUE TO PHYSICAL FORM OF PRODUCE

# REACTION YI

HAZARDOUS POLYMERIZACION COMDITIONS TO AVOID HAZARDOUG FOLYMERIZATION RESULTING IN A LARGE RELEASE OF ENERGY

BIABLEITY: CONDITIONS TO AVOID IF UN-STABLE UNDER NORMAL CIRCUMSTANCES

INCOMPATIBILITY HATERIALS TO AVOID

# BECTION\_VII BEILL\_OR\_LEAK\_ENGERURES

REARDVARLE PRECAINTENS TO BE TAKEN AND THE METHODS OF CIFAN HIP TO BE URED IN THE FERNIT OF RELIGIOUS OF THE PRODUCT CONSULT FEDURAL, STATE AND LOCAL REGULATIONS FOR ACCEPTED PROCEDURES AND ANTREPORTING OR NOTIFICATION REQUIREMENTS.

PROTECTAVE LONGENHENT TO BE USED

THIS SECTION INDICATES PROTECTIVE FOLLP-MENT TO BE USED WITH MANUEING THE PRODUCT:

BECCIAL PRECAUTIONS OF OTHER COMMENTS THIR SECTION IS TO COVER ANY PFLEVANT POINTS NOT PREVIOUSLY MENTIONED

#### ADDITIONAL COMMENTS

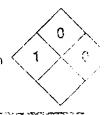
ASHLAND WISHES TO INFORM YOU THAT BERIOUS ACCIDENTS MAYERFOLIED FROM THE MIGUSE OF "EMPITED" CONTAINERS (DRUME, 5 AND 5 SALLON PAILS, ETC.). REFER TO SECTIONS IN AND IX.

WE RECOMMEND THAT CONTAINERS BE EITHER PROFESSIONALLY RECONDITIONED FOR REUSE BY Certified Firms or properly disposed of By Certified Firms to Help Reduct the Possibility of an accident. Disposal of Containers Bhould be in accordance with Applicable Laws and regulations. "Empty" Drums Smould not be given to individuals.

COPYRIGHT 1985 LAST PAGE-- SEE ATTACHMENT PAGE ENCLOSED -- LAST PAGE

| •                                    |
|--------------------------------------|
| Material Safety Data Sheet           |
| May be used to comply with           |
| OSHA's Hazard Communication Standard |
| 29 CFR 1910.1200. Standard must be   |
| consulted for specific requirements. |

CERRO COPPER PRODUCTE COMPANY MSDS NUMBER - COFC-00-0367



| ANTITY MS Used on Label and L'SI)<br>MIRACHEM 103 CLEANER/DECNEASER CONCEN | TRATE           | Note: Diank spaces are not permitted. If any thin information is evaluable, the space must be                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section I                                                                  |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Manufacturer's Name MIRACHEM CORPORATION                                   |                 | Emergency Telaphona Number<br>(692) 964-3638                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Address (Number, Street, City, State, and ZIP Code)<br>2107 E. 5TH STREET  |                 | Telephone Humber for Information (602) 966-3030                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TEMPE, ARIZONA \$5281-3034                                                 |                 | Date Prepared<br>JULY 1989                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                            |                 | Signature of Preparer (optional)                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Section II — Hazardous Ingredients/Identit                                 | y Information   | ngg 150km nagga kg. at samping 4 (AA AA MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR<br>Ngg 150km nagga kg. at samping 4 (AA AA MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR MAN AR M | Personal de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la c |
| Hazardous Components (Specific Chemical Identity;                          | Common Name[s   |                                                                                                                                                                                                                                  | Limits<br>mended foliaptionally                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| THE PRODUCT IS A MIXTURE. AS SET FORTH IN                                  | SUBPART 2 PAR   | T 1919 OF TITLE 29 CFR, THE PRODUCT IS NOT C                                                                                                                                                                                     | ONSIDERED A HULLUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OR PHYSICAL HAZARD. IN EVALUATING THE                                      | PRODUCT, NONI   | E OF ITS INGREDIENTS ARE FOUND ON ANY I                                                                                                                                                                                          | JISTS OF ENZASIDOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CARCINOGENIC OR FANNED CHEMICAL AGENT                                      | IS OR MATERIA   | LS GENERATED BY THEM. AGENCIES SURV                                                                                                                                                                                              | EYED INCLUDED THE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| NATIONAL CANCER INSTITUTE, E.P. A., F.D.A., N.                             | ATIONAL SCIEN   | CE FOUNDATION, O.S.II.A. (CALIFORNIA AND                                                                                                                                                                                         | HEDERALL CONSCIOU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| PRODUCT SAFETY COMMISSION, DEPARTMENT                                      | OF TRANSPOR     | CTATION (SAFETY INSTITUTE AND RESEARCE                                                                                                                                                                                           | I SPECIAL PLOCEALS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ADMINISTRATION) AND NATIONAL TOXICOLOG                                     | YPROGRAM, TH    | EPRODUCTIS AN AQUEOUS EMULSION OF D.I.                                                                                                                                                                                           | WATER PLILPGENIS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| TYULSIFIERS, STABILIZERS TO ADJUST PH. ANI                                 | O C9 TO C12 HYD | ROCARBONS, THE PRODUCT IS CONSIDERED                                                                                                                                                                                             | BIODIGEADADA AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| S A V.O.C. OF 91 GMS/LITER OR .77 LBS/GAL.                                 |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                            |                 |                                                                                                                                                                                                                                  | ~ <del></del>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| THE PRODUCT HAS BEEN TESTED FOR SAFETY B                                   | SIOLOGICALLY.   | IFST REPORTS ARE AVAILABLE ON REQUIST                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                            | `               |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                            |                 |                                                                                                                                                                                                                                  | THEOLOGICAL SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION OF THE SECTION O |
| Section III Physical/Chemical Character                                    | ristics         |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Boiling Point                                                              | 212F            | Specific Gravity (H <sub>2</sub> O = 1)                                                                                                                                                                                          | ,5265                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Vapor Pressure (mm Hg.)                                                    | <20             | Melting Point                                                                                                                                                                                                                    | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Vapor Density (AIR = 1)                                                    | .9              | Evaporation Rate<br>(Butyl Acetate = 1)                                                                                                                                                                                          | <1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Solubility in Water COMPLETE EMULSIFICATION IN WATER                       |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Appearance and Odor CLEAR TO MILKY LIQUID - MILD GDOR                      |                 |                                                                                                                                                                                                                                  | and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o |
| Section IV — Fire and Explosion Hazard D                                   | ata             |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Flash Point (Method Used)<br>PMCC - NONE (ASTM D93)                        |                 | Flammable Limits NON-FLAMMABLE   LEL NON-COMPUSITELE   N/                                                                                                                                                                        | A UEL N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Extinguishing Media NONE                                                   |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Special Fire Fighting Procedures NONE                                      |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Unusual Fire and Explosion Hazards NONE                                    |                 |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| 2 1' 1'                                | Beetivity Data                                                                    |                |                                 | <del></del>         |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
|----------------------------------------|-----------------------------------------------------------------------------------|----------------|---------------------------------|---------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|                                        | Reactivity Data                                                                   |                | : Conditions to Avo             | ni d                |                                     | and resident and the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the | promise deservatings and collection with 1996 (1996). And a series |
| Stability                              | Unstable                                                                          |                | Conditions to Ave               |                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
|                                        | Stable                                                                            | XX             | OXIDIZING AND                   | REDUCING AG         | ENTS                                | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ·                                                                  |
| Incompatibility                        | (Materials to Avoid)                                                              |                | STRONG ACIDS                    | AND ALKALIES        | DEMULSIFY PR                        | ODUCT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                    |
| Hazardous Dec                          | omposition or Bypro                                                               | ducts          | THERMAL DECO                    | OMPOSITION M.       | AY PRODUCE CO                       | ),                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    |
| Hazardous<br>Ralymarization            | May Occur                                                                         |                | Conditions to Avo               | oid                 |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Polymerization                         | Will Not Occur                                                                    | XX             |                                 |                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Section VI -                           | - Health Hazard                                                                   | Data           |                                 |                     | WP PERFECTION CONTRACTOR CONTRACTOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | **************************************                             |
| Route(s) of Ent                        | ry:                                                                               | In<br>NOV I    | nalation?<br>IAZARDOUS          | S<br>NOS RA         | kin?<br>ZARDOUS                     | Indeston?<br>NON-HAZARBOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | LD50 > fam/is                                                      |
| ACUTE - NO<br>MANUAL FOR<br>MODERATE F | (Acute and Chronic) KNOWN HAZARD LD59 ORAL TOXI YE IREITANT IF NO OT YET DETERMIN | T WASI         | IED FROM EYES I                 | IMMEDIATELY.        | WHEN WASHEL                         | HNGS ASSOCIATION HE<br>LATION TOMICITY. CO<br>DIMMEDIATELY, NO IEI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ARTO HIME BUTNE<br>ASIDI RED MILL TO<br>NTAHON OCCULATO            |
| Carcinogenicity<br>NONE                | у:                                                                                | NTP?<br>NO     |                                 | IARC Monograp<br>NO | ohs?                                | OSHA Regulated?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Signs and Sym                          | ptoms of Exposure                                                                 |                | PRODUCT CO                      | NSIDERED NON        | -HAZARDOUS                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
|                                        | avated by Exposure                                                                | s              | NONE KNOW!                      |                     | DIATELY FLUSH                       | I WITH WAIFR AND CON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RSUIT PRYSICIAN.                                                   |
|                                        | — Precautions fo                                                                  |                |                                 |                     | VATER INTO CON                      | NTAINING AREA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 200 200 200 200 200 200 200 200 200 200                            |
| Waste Disposal                         | Method FLU                                                                        | SH TO          | SEWER WHERE A                   | PPLICABLE WIT       | THIN FEDERAL C                      | DR LOCAL WASTE DISPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SAL REQUIREMENTS                                                   |
| Precautions to                         | Be Taken in Handlin                                                               | g and St       | oring USE WI                    | TH ADEQUATE V       | VENTILATION, P                      | ROTECT FROM FREEZIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | KG.                                                                |
| Other Precaution                       | ons KEEP OU                                                                       | OF RE          | ACH OF CHILDRI                  | EN.                 |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Section VIII                           | — Control Meas                                                                    | ures           |                                 |                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Respiratory Pro                        | ofection (Specify Type                                                            | ?)             | NO SPECIAL<br>CERTIFIED ST      | REQUIREMENT         | IS. IF PRODUCTOR                    | T IS SPRAYED OR VAL<br>S RECONST NEED OUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OFIZED, A NIOSH<br>NOT REOTHED                                     |
| Ventilation                            |                                                                                   | MEND           | ) SPECIAL REQUI<br>ADEQUATE VEN | REMENTS             | Special                             | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ariaba a Saria                                                     |
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| PER GLO                                | res - NO SPECIAL RI<br>VES ARE RECOMMI                                            | OUTRE.<br>NDED | MENT.<br>BUT NOT REQUII         | RED).               | Protection<br>ANTI-SPLASE G         | OGGLES ARE RECOM!:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ENDED.                                                             |
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|                       | SECTION II - HAZA  SECTION II - HAZA  TLV (Unital)  T 1 100 ppm  LARDOUS MIXTURES OF OT  E Kay of iy  CACCATO  N/A  N/A  Infinite  I with sweetish  TION IV - FIRE AND  T.O.C. | SECTION I  H CORPORATION  431 Stephenson Highway Troy, Michigan  TRADE NAME AND S  FORMULA  N/A  SECTION II - HAZARDOUS INGREDIENTS  ALLOYS AND METALL  ALLOYS  METALLIC COATINGS  METALLIC COATINGS  METALLIC COATINGS  TO THERS  PLUE METAL  OTHERS  SECTION III - PHTSICAL DATA  SECTION III - PHTSICAL DATA  SECTION III - PHTSICAL DATA  212  SPECIFIC GRAVITY (H <sub>2</sub> O = 1)  N/A  PROPERENT, VOLATUE  N/A  STOOLUME (M)  N/A  LWAPORATION RATE  LWALLET = 1)  Infinite  I with sweetish odor  FLAMMABLE LIMITS  T.O.C.  PTS Should wear full protective clo  in a positive mode. | SECTION I  H CORPORATION  (313) 585-4583  TRADE NAME AND EYNONYMS MR-625 P  FOAMULA N/A  SECTION II - HAZARDOUS INGREDIENTS  IN TAME AND EYNONYMS MR-625 P  ALLOYS AND METALLIC COATINGS  BASE METAL  ALLOYS  METALLIC COATINGS  PLUS CATTING OR CORE FLUX  OTHERS  CALLER METAL  ALLOYS  PREMETAL  ALLOYS  METALLIC COATINGS  PLUS COATING OR CORE FLUX  OTHERS  CALLER METAL  ALLOYS  METALLIC COATINGS  PLUS COATING OR CORE FLUX  OTHERS  CALLER METAL  ALLOYS  METALLIC COATINGS  PLUS COATING OR CORE FLUX  OTHERS  CALLER METAL  ALLOYS  METALLIC COATINGS   SECTION I  CORPORATION  SECTION I  H CORPORATION  A31 Stephenson Highway  Troy, Michigan 48083  TRADE NAME AND STNONYMS  MR-625 PF  FORMULA  N/A  SECTION II - HAZARDOUS INGREDIENTS  TLY  ALLOYS  ALLOYS  METALLIC COATINGS  METALLIC COATINGS  METALLIC COATINGS  TLY  OTHERS  CALCEATS FORMULA  SECTION III - PHYSICAL DATA  TOTHERS  SECTION III - PHYSICAL DATA  TOTHERS  SECTION III - PHYSICAL DATA  TOTHERS  N/A  SECTION III - PHYSICAL DATA  TOTHERS  N/A  SPECIFIC GRAVITY (1/40-1)  N/A  EVAPORATION RATE  LATER TO THE AND EXPLOSION HAZARD DATA  TOO.C.  FLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  LIMI  N/A  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  PLAMMADLE LIMITS  P |

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